



Project UNDP–PIMS N°4679 ATLAS No. 77699
GEF - PIMS N°4884

**Report of the
Mid Term Review (MTR) of the Project**

***Peru: Nationally Appropriate Mitigation Actions
in the Energy Generation and End-Use Sectors***

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Lima, March 2019

MTR DATA:

Project:

Peru: Nationally Appropriate Mitigation Actions in the Energy Generation and End-Use Sectors

PIMS ID: 4679

GEF ID: 4884

MTR time duration:

December 12th, 2018 – March 15th, 2019

Region and Country:

LAC - Peru

Focal Area/GEF Strategic Program:

GEF Focal Area: Climate Change - GEF Strategic Program: CC-1

Executing Partner:

Ministerio de Energía y Minas, Perú

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Acknowledgements:

The MTR team acknowledges to the UNDP officials, with special mention of Mr. Jorge Alvarez Lam and the GEF, by the confidence placed in the designation of our team to carry out the MTR; and in the same way to the Directorate General of Energy Efficiency (DGEE) of the Ministry of Energy and Mines (MINEM), in the person of their DG, Mr. Rosendo Ramirez and the Project team, specially to its Coordinator Ms. Daniella Rough and the specialist Yudith Arzapalo, for their kind support in the preparation of this MTR.

This acknowledgement is extended also to the technical staff, specialists and external consultants of the public and private institutions that have been consulted and interviewed on the many aspects of the Project under review, whose names and positions appear in the Annexes of this report.

The content of this report, however, does not necessarily reflect the opinions of the United Nations for Development Program, its Executive Board or the members of United Nations programs. The report contains and reflects only the views and proposals of the consultant.

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- B.** Terms of Reference of the MTR
- C.** MTR Evaluation Criteria.
- D.** MTR inception report
- E.** Documents reviewed.
- F.** End of Mission report
- G.** Questionnaire applied in interviews; and list of institutions and persons interviewed.
- H.** Valuation scale.
- I.** Format of UNEG Code of Conduct signed
- J.** Format for MTR final document signed
- K.** Rastro de auditoría obtenido a partir de los comentarios recibidos en el borrador del informe MTR.

Acronyms and abbreviations

APR	Annual Progress Report
BAU	Business-as-Usual baseline projections.
BNE	National Energy Balance (<i>Balance Energético Nacional</i>)
CARELEC	Resource administration council for capacity building in electricity (<i>Consejo de Administración de Recursos para la Capacitación en Electricidad</i>)
CDM	Clean Development Mechanism, as a body of UNFCCC.
CDP	Project Oversight Committee (<i>Comité Directivo del Proyecto</i> in Spanish)
CENERGIA	Center for energy and environment conservation (<i>Centro de Conservación de Energía y del Ambiente</i>)
CEPLAN	National Center for Strategic Planning (<i>Centro Nacional de Planeamiento Estratégico</i>)
CO2	Carbon dioxide (<i>Dióxido de carbono</i>)
CO2e	Value combined of GHG equivalent in units of CO2.
COES	Committee for Economic Operation of the National Interconnected System (<i>Comité de Operación Económica del Sistema Interconectado Nacional</i>)
CPAP	Country Program Action Plan
CPD	Country Program Document
COFIDE	Peru Development Financing Corporation (Peru Bank of Development).
DGCDC	General Directorate for Climate Change and Desertification, Ministry of the Environment
DGEE	General Directorate for Energy Efficiency, Ministry of Energy and Mines.
DS	Supreme Decree (<i>Decreto Supremo</i>)
EE	Energy Efficiency (<i>Eficiencia Energética</i>)
RER	Renewable Energy (<i>Energías Renovables</i>)
ERNC	Non-Conventional Renewable Energy (<i>Energías Renovables No Convencionales</i>)
FISE	Social Investment Fund for Energy (<i>Fondo de Inversión Social Energético</i>)
FMAM	GEF (<i>Fondo de Medio Ambiente Mundial</i>)
GEF	Global Environmental Facility
GHG	Greenhouse Gases (<i>Gases de Efecto Invernadero. GEI</i>)
GMT	Multisectoral workgroup (<i>Grupo Multisectorial de Trabajo</i>)
GoP	Government of Peru
IBD	Inter-American Bank of Development
INDECOPI	National institute for the defense of competition and protection of the intellectual property (<i>Instituto Nacional de Defensa de la Competencia y de la Protección a la Propiedad Intelectual</i>)
INFOCARBONO	Data generation network for the national GHG inventory in Peru. (<i>Red de Generación de datos para el inventario nacional de GEI en el Perú</i>)
ISC	Selective Tax for Consumption (<i>Impuesto Selectivo al Consumo</i>)
KV	Kilovolts
Kwh	Kilowatt-hour
LEAP	Long-range Energy Alternatives Planning
LECB	Low Emission Capacity Building Program (<i>Programa de fortalecimiento de capacidades en desarrollo bajo en carbono</i>).
LEDS	Low Emissions Development Strategies (<i>Estrategias de Desarrollo Bajo en Emisiones</i>)
MACC	Marginal Abatement Costs Curve (<i>Curva de Costos Marginales de Reducción de GEI</i>)
M&E	Monitoring and Evaluation
MEF	Ministry of Economy and Finance.
MINAM	Ministry of the Environment (<i>Ministerio de Economía y Finanzas</i>)
MINCU	Ministry of Culture (<i>Ministerio de Cultura</i>)
MIDIS	Ministry of Development and Social Inclusion (Ministerio de Desarrollo e Inclusión Social)
MINEM	Ministry of Energy and Mines
MRV	Monitoring, Reporting and Verification.
Mwh	Megawatt-hour
NAMA	National Appropriate Mitigation Actions (<i>Acciones Nacionales Apropriadas de Mitigación</i>)
NDC	Nationally Determined Contribution (<i>Contribución Determinada al Nivel Nacional</i>)

NUMES	New sustainable energy matrix project (<i>Proyecto Nueva Matriz Energética Sostenible</i>).
OSINERGMIN	Supervisory body for investment in energy and mines in Peru. (<i>Organismo Supervisor de la Inversión en Energía y Minas</i>)
RbB	Results based budget.
PMR	Partnership on Market Readiness
PIF	Project Identification Form
PIR	Project Implementation Review
PlanCC	Project to support planning for climate change (<i>Proyecto de Apoyo a la Planificación en Cambio Climático</i>)
PNER	National plan for rural electrification (<i>Plan Nacional de Electrificación Rural</i>)
ProDoc	Project Document.
PRODUCE	Short name for Ministry of Production of Peru.
PROSEMER	Program for the efficient and sustainable management of energy resources (<i>Programa para la Gestión Eficiente y Sostenible de los Recursos Energéticos</i>)
PUCP	Catholic University of Peru (<i>Pontificia Universidad Católica del Perú</i>)
PV	Photovoltaic
RE	Renewable Energy
RAGEI	Annual report on GHG in Peru (<i>Reporte Anual de Gases de Efecto Invernadero</i>)
SENCICO	National training service for the construction industry (<i>Servicio Nacional de Capacitación para la Industria de la Construcción</i>)
S&L	Standards and Labelling, in energy efficiency.
PVS	Photovoltaic panel system
SUNAT	National superintendence for tributary administration (<i>Superintendencia Nacional de Administración Tributaria</i>)
TA	Technical Assistance
ToR	Terms of Reference
TJ	Tera Joules
TT	Tracking Tools
UNDP	United Nations Development Program (UNDP in Spanish)
UEC	Unit Energy Consumption
UNFCCC	United Nations Framework Convention on Climate Change (CMNUCC, in Spanish)
WB	World Bank.

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1. 1. Executive Summary

1.1 Project Information

Project Name	Project National Appropriate Mitigation Actions (NAMA) in the energy generation sector and its end use in Perú		
UNDP ID for the Project (PIMS#):	4679	PIF Approval date	Jun 7 th , 2012
GEF ID for the Project (PMIS#):	4884	CEO authorization date	April 9 th , 2014
ATLAS Unit Dossier Nr- ID del Proyecto (<i>Award # Proj. ID</i>)	00077699	Signature date of the Project Document.	October 19 th , 2015
Country	Peru	Date of recruitment of the Project Coordinator	April 1st, 2016
Region:	LAC	Date of inception workshop:	June 16th, 2016
Focal Area	Climate Change	Date for completion of the Mid Term Review (MTR):	March 15th, 2019
Strategic objectives of the Focal Area	Objetivo N°2 Objetivo N°3 Objetivo N°6	Expected date for completion	June 22th, 2020
Fiduciary Fund [indicate GEF TF, LDCF, SCCF, NPIF]:	GEF	In case of revision, new date proposed for completion	
Organismo ejecutor/ Socio en la ejecución:	Ministerio de Energía y Minas		
Other partners:			
Project financing	<i>At the time of CEO approval (US\$)</i>	<i>At the time of the MTR (US\$)</i>	
[1] GEF funding	4,500,000	4,500,000	
[2] UNDP Contribution	1,060,000	1,060,000	
[3] GoP	30,950,000	30,950,000	
[4] Other partners			
[5] Total co-financing [2 + 3+ 4]:	32,010,000	32,010,000	
PROJECT TOTAL COST [1+ 5]	36,510,000	36,510,000	

1.2 Description of the Project.

The Project under review has been sponsored by the Global Environment Fund (GEF) in order to strengthen the capacity of the Government of Peru in the identification and structuring of the 'National Appropriate Mitigation Actions' (NAMA) in the energy sector.

It is expected that the Project outcomes will create incentives for investment in renewable energy grid-connected installations (solar, wind, biomass, geothermal and hydroelectric power less than 20 MW), and the use of renewable energy in isolated systems not yet connected to the national grid (mainly solar with PVS, biomass, and other renewable for clean cooking).

The Project is based on the mitigation efforts underway and others provided for in the energy sector and national development policies; and it has been adjusted to meet the commitments of the country, within the framework of the Paris Agreement under the UNFCCC.

The Project has led to definition and establishing of priorities for actions in the energy sector, through specific NAMAs and their potential for mitigation, in terms of clear and viable reduction of GHG emissions.

The Project has resulted in the definition and establishment of priorities for actions in the energy sector, designing specific NAMA and planning results of mitigation, in terms of clear and viable reduction of GHG emissions.

In that sense, following the outlines of the signed ProDoc (2015), implementation of four pilot NAMA has been decided, including two schemes based on renewable energy generation, both connected or autonomous (off-grid); and two oriented to energy efficiency actions, covering public and non-public sectors, including actions in electrical transport and clean cooking.

The Project will contribute to the compliance of the country of the commitments under the Paris Agreement, by attaining voluntary goals of mitigation in the energy sector, through a reduction of direct emissions estimated of 962,000 tons of CO₂e (year 2030); and an additional reduction of indirect emissions of 1,600, 000 tons of CO₂e. As collateral positive effects, the NAMA will generate benefits at the national level on economic growth, poverty reduction, social welfare, economic competitiveness and energy safety for the country.

The Project is executed under the modality of national implementation, having the Ministry of Energy and Mines (General Directorate for Energy Efficiency – DGEE) as the executing governmental entity. A Directive Committee integrating representatives of the main governmental entities involved has been installed to oversee and orient the progress of the Project, and a 'Unidad de Gestión' (UGP) is operating for the Project direct management within the Ministry premises, with the support of UNDP and the Project operative budget.

The total amount allocated for investment by the GEF is US\$ 4.5 million; and a co-financing amount of US\$ 32.01 million by direct and indirect actions and projects convergent to the Project objectives and outcomes, comes from Peruvian government entities (31 million) and UNDP (1 million). The Project is carried out under the supervision of the CDP, and UNDP acts as the guarantor. Day to day supervision is done in compliance of monitoring and follow up rules and outlines of UNDP/GEF and the signed ProDoc, which includes mechanisms and tools for tracking and periodical reporting through trimestral and annual documents, implementation reviews (PIR), and mid-term and final evaluations.

1.3 Summary of Project progress.

The Project document establishes an execution term of 4 years and eight months starting on October 19th, 2015 and ending June 22th, 2020, assigning a total budget of US\$ 4.5 million to be executed up to the end of 2019. Delays in starting, due to several political circumstances in the country and need for institutional coordination, took seven months, since the signature of the ProDoc, up to the recruitment of the Coordinator. This meant in time a late start of several prime activities and resulted in postponement of goals.

In addition to these unforeseen factors, the delay was also due to the incipient expertise in the country regarding the innovative and highly technical aspects that the Project was pioneering in Peru. The NAMA concept had a recent inception in the UNFCCC negotiations, and the subject of reduction of GHG and climate change were just emerging for the economic sectors and subsectors involved.

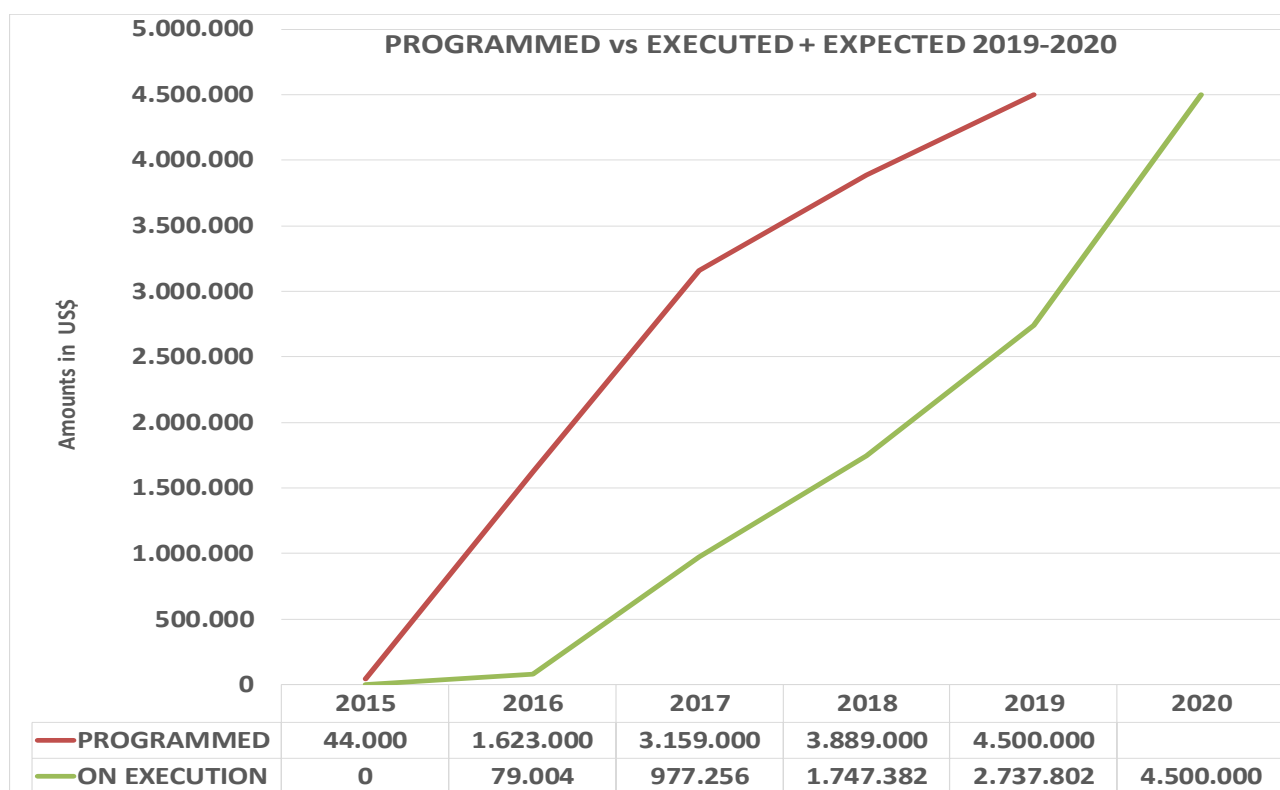
Project components derive directly from the expected Outcomes and coincide in their description and sequence order. The sequence that the components suggest, which starts from the elaboration of then inexistent baselines, up to the full design and implementation of NAMA activities, has not, however, rigidly conditioned the execution sequence, allowing for certain flexibility and simultaneity in actions of the three first components, although the fourth and final one could not start, waiting for substantial inputs from the third component.

Several important discussions and decisions were done during the inception workshop (June 17th, 2016), after the CDP installation, the recruitment of the Coordinator and the Project key team members. From this point on the Project actions became active and the dynamism was reflected in the periodical progress reports and annual PIR.

The comparative evolution in the budget execution is shown in the graph below, where the "learning curve" in expensed reveals both the effort done and the need to accelerate the investment rhythm during 2019-2020 in order to complete the Project. It is evident in this scheme the consequent need to extend the execution period in order to reach the expected results originally foreseen for 2019. Budget execution at the end of 2018 is at **39%**, and the originally programmed gradient for expenses is even higher for 2019, gradient that could be obtained only with an extension up to 2020. Results and achievements of the Project are summarized in the next section and in the annexes of this MTR.

A comparison of the programmed vs executed budget is shown in the following graph, which reveals the experienced "learning curve", and the need to increase the rate of expenditure for the years 2018-2020. It is evident in the scheme the need to extend the implementation period to meet the investment targets originally raised for the 2019, considering the current execution of 39% to 2018, and that the original figures involved a curve of much higher gradient for investment, which would only be reached now with the previsions for the year 2020. The achievements and results of the project are briefly summarized in the following section; and extensively in the body of the present report and its annexes.

Real vs Programmed Budget execution



Source: ProDoc, Project data and own elaboration. Investment amounts for 2019 and 2020 are preliminary estimates based on the tentative action plan presented for 2019 (Jan).

1.4 Summary of Outcomes and Achievements of the Project at the MTR.

Parameter	Valuation ¹	Description of the Achievements
Project Strategy	N/A	
Progress in Outcomes and achievements	Outcome 1 HS Established national and regional GHG emission BAU reference baseline for the energy sector	The baseline and BAU figures have been established for the measurement and registering of GHG reductions in the energy sector; and the national level registration and verification framework (INFOCARBONO) has been strengthened.
	Outcome 2 S Prioritized mitigation options and marginal cost of emission reduction curves (MACC) are identified. NAMA Design Documents are developed in the selected sub-sectors (new renewable energy sources both connected and non-connected to the grid), and 4 NAMA activities are ready for implementation	All four NAMA have been designed along the terms envisaged for the Project, including the revision of the respective MAC curves. Training sessions have been carried out for the selected subsectors. It is necessary to complete the modification of the regulatory framework that will promote its implementation and enforcement.
	Outcome 3 MS Entities related to renewable energy connected to the grid (all technologies excluding large hydro) and off grid renewable energy subsectors are implementing prioritized NAMAs in a piloting phase and contributing to the achievement of Peru's voluntary mitigation target	The implementation of the four defined NAMA has been initiated, with the approval and inclusion of their full scope in the frame of the commitments for the national contribution (NDC). The respective MRV protocols have been simultaneously defined. Payment systems in off-grid installations are not yet working as planned and need special assessment.
	Outcome 4 MS Accurate mechanism for measurement and accounting of actual GHG emission reductions from mitigation actions in the energy generation and end-use sector, are in place	Design of the MRV protocols are completed, with advances for its implementation at the national level, and at the level of the UNFCCC. Inclusion of the NAMA actions in the mechanism of the national budget-for-results system by MEF is being coordinated. Adoption of several standards and norms considered as enabling conditions for NAMA is still pending.
Project execution and adaptive management	MS	The project has a relatively satisfactory physical execution, but its execution capacity requires enhancement with the planned expansion of key positions and complementary actions of NAMA implementation, in order to accelerate its execution process Between 2019 and 2020.

¹ Valuation scale refers to: **HS**=Highly Satisfactory; **S**= Satisfactory; **MS**= Moderately Satisfactory; **MU**= Moderately Unsatisfactory; and **U**=Unsatisfactory. For Sustainability it reads **P**=Probable; **MP**=Moderately Probable; **MI**=Moderately Improbable, and **I**=Improbable.

Sustainability	MP	The sustainability assessment of the Project, in terms of long-term continuation and progress of its activities, requires greater foresight and planning, political and inter-institutional coordination, and organic incorporation of private sector actions, as well as using social engineering, in order to have the enabling conditions, both normative and technical convergence.
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1.5 Summary of conclusions

- The project is a laudable step towards sustainable energy development in the country. While there have been delays due to political and institutional reasons, partly because of the pioneering nature of its objectives and goals, it requires increased efforts to overcome barriers and to achieve a better understanding of its scope. The current political and cultural environment in the country configure a more favorable scenario for a smooth implementation of actions, interinstitutional collaboration, and greater openness by the various actors.
- There is a dual vision of the Project priorities among the stakeholders: One appreciates the technological advances in energy development, but their priority and attention focus in the social and economic well-being; the other is mostly focused on the reduction of GHG emissions for the mitigation of climate change. A wider dissemination is required about the scope and importance of the NAMA for the competitiveness and climate security of the country, and of its role in the process of a comprehensive social and economic adaptation.
- The design of the Project is appropriate in terms of its main objectives and expected results; but it is necessary to define more precisely the scope of the very NAMAs, their goals, and respective actions needed - especially in reference to the attribution of GHG direct and indirect emissions. This flaw in the starting design – due to the lack of a background to establish baselines - has resulted in generic outcome indicators, which are not quite aligned with the 'SMART' outlines and should be reviewed and sharpened during the remaining period of the Project. This MTR considers the indicators could be reviewed by the Project team supported by a technical group, in order to systematize the lessons learned for future analogous projects.
- An important effort to advance has been made, involving an arduous learning curve, which should result in capitalization of know-how and lessons learned. The global financial progress of the project is 39% and the corresponding average rating is either satisfactory or moderately satisfactory. The budget figures reveal both the relative backwardness in terms of execution, but also the relative efficiency in the achievement of results, those relating to inventories, baselines, review of assumptions for the curves of marginal cost of abatement of emissions, and design of the NAMA with their respective protocols of MRV.
- To complete the Project, a no-cost time extension of at least six-month (up to December 2020) would be necessary, accompanied by strengthening measures to enhance the technical staff with positions *ad-hoc* for implementation needs, and attention to the recommendations referred to in the present report.

- The enabling conditions for the implementation of the NAMA are crucial. To obtain the needed adequate normative and rules require a vigorous political support both from MINEM itself and from the CDP members and the entities they represent, whose closeness and participation in the Project development might be more intense and frequent.
- Interviewed actors repeatedly suggest that the project takes a practice of openness in the information produced, and more fluent communication with all stakeholders, mainly those from the private sector and business associations, in order to enrich the lessons learned and avoid duplication of efforts.
- Activities for accountability, revision and maintenance of the administrative records of expenditure and execution, are compatible with the good practices of the UNDP/GEF, including audits exercises, and no needs for corrections have arisen during the MTR.
- Gender issues are eminently cross-sectoral. The Project addresses them with direct and specific activities such as the pilot activities and the promotion of a Technical Institute of Women (ITM), laudable initiative which however requires a wider environment for implementation that surpasses the energy sector. This aspect demands a specialized work with other DGs within MINEM (DGER, EGE) and several Ministries (MIMP, MINAM, MINCUL, MIDYS); aside of a close relationship with actors of civil society and international cooperation currently working in this field.
- In terms of risks for the sustainability of the Project outcomes, there are no signs of negative changes in the structural terms in which they are expressed in the ProDoc. On the contrary, there are now positive signs of greater political and economic stability, and favorable expressions in the Government environment towards the adoption of sustainable practices for environmental caring development; and as a result, greater attention to issues of sustainable energy.

1.6 Summary of Recommendations

Rec. #	Recommendations	Responsible Entities
A.	Objectives and strategy for implementation	
A.1	Review and precisely define objectives and expected outcomes for each NAMA in order to derive accountable and specific indicators for the remaining execution period and ultimate follow up. In particular, discuss the goals for direct and indirect GHG reduction by the Project, and draw lessons learned for future analogous initiatives.	MINEM, DGEE, CDP MINAM
A.2	Clearly define the scope of intervention of the Project in relation to other projects and activities in current development that are convergent, coincidental, or in recent inception, in order to avoid duplication or overlapping of efforts and responsibilities.	CDP and Project team

Rec. #	Recommendations	Responsible Entities
B.	Adaptive management	
B.1	Seek approval of an time extension of the Project execution period, justified in the unforeseen initial delays and the relative efficiency in the implementation of the substantive components of the Project (inventories, baselines, documents of) NAMA and MRV protocols); as well as on the analysis of its impact and relevance in the context of the NDC of the country and sustainability of the investment realized.	MINEM, CDP and Project team
B.2	Ensure the expansion of the technical team in charge of the implementation of the Project, as has been proposed by the Coordinator in the 2019 workplan, which seems to be adequate: specialists in information and communications, gender and climate change, and Electric Transport as the NAMA requiring more interinstitutional support.	MINEM, UNDP MEF, MINAM, y CDP
B.3	Organize, with the endorsement of the CDP, workgroups or committees of multisectoral technical support for each NAMA, with regular sessions; and establish a comprehensive roadmap until the end of the Project, with extension up to 2030, in terms of expected impact and follow-up needs.	CDP and Project team
B.4	Coordinate as soon as possible with the OPP of the Ministry and with MEF the preparation and programming to incorporate the NAMAs in the budgeting by results (BBR) national scheme, in order to opportunely attain this inclusion, crucial for the NAMAs implementation, during the execution frame of the Project.	MINEM, DGEE, OPP, MEF.
C.	Information and communication	
C.1	Expand the scope of communication and information, both through the website and by calls for workshops, briefings, newsletters or monthly fact sheets on advances, visits and formal invitations to guilds and businesses, among other means. Procure, to this end, the support of the highest ministerial level in MINEM and of other ministries and institutions, especially those who integrate the CDP.	MINEM, DGEE, CDP, and Project team
C.2	Establish routines and periodical technical meetings for exchange and systematic internal discussions within the Project team, about the progress toward targets, and avenues for innovation in actions, or amendment in work plans.	DGEE, Project team

Rec. #	Recommendations	Responsible Entities
D.	Gender and intercultural approaches	
D.1	Carry out studies, in coordination with the executors of the projects and activities that make up the NAMA, about gender and cultural features that may be influencing the implementation of the NAMA and role in poverty reduction (e.g. state of operation and use of SFV and improved stoves, cultural biases, attitudes and rationale of economic choices, etc.).	MINEM (DGEE, DGER), Project team
D.2	Coordinate, with sectors and institutions specialized in the subject, the final design of the proposed technical institute for women' (now called 'Escuela Energética para Mujeres – eMujer') and optimizing of its performance in terms of management and adscription, relying on already existing experience (SENCICO, SENATI, and other entities and NGOs).	MINEM, DGEE and Project team
E.	NAMAs and implementation of activities	
E.1	It is essential to have up-to-date information on the profile of energy demand, especially at the level of rural families but also in urban areas, including the future potential of other natural sources of sustainable energy, involving local governments and organized civil society. The Census of the 2017 should be an important tool for this interagency effort.	MINEM. DGER, DGEE, OSINERGMIN, Project team
E.2	Coordinate with the DGER the design of instruments to improve the planning schemes for energy access and development of actions in electrification, upgrading of the Rural Energy Plan, and regulating the intervention of the entities involved in the system (NGOs, regional and local governments, among others), in order to avoid the problems of cost overrun of the initiatives, and encourage the best use of the opportunities for services and care.	MINEM, DGEE y DGER
E.3	Focus efforts and diligences in legal and regulatory instruments considered enabling conditions. For this purpose, increase coordination with OSINERGMIN, and establish technical dialogues with the actors involved in the design of rules, oriented to the removal of barriers to their formulation and approval.	MINEM, DGEE, OSINERGMIN
	<i>NAMA "Universal Access to Sustainable Energy"</i>	
E.4	Coordinate and participate - working along with OSINERGMIN - in the review of business models to incorporate indicators of quality of service, with minimum standards, tariff structures (rate BT8); and studies on the causes of payment default or abandonment of SFV services, items that should inform the MRV protocols, to ensure the life span of the equipment (calculated at 20 years). Social and organizational factors - that tend to be overlooked despite their	MINEM, DGEE, DGER, OSINERGMIN

Rec. #	Recommendations	Responsible Entities
	importance in the introduction and sustainable management of services in rural areas - should be identified in this regard.	
E.5	Promote collaboration and exchange with other national entities and cooperation institutions that have experience and lessons learned in clean cooking, in order to strengthen and make more efficient and instructive the pilot activities. The knowledge shared in this area is vital to accurately determine the avoided emissions and ensure a sustainable implementation of the activities to be promoted. In this sense it is also essential that the pilots prioritize the building up of local leadership from the very beginning, as well as a local ownership, both in the management and in the direct benefits.	MINEM, MINAM, UNDP, and Project team
	<i>NAMA Energy Efficiency</i>	
E.6	Promote appropriation of the NAMA in the framework of the existent energy efficiency project in MINEM, through an organic and ongoing interaction of respective specialists, and political support of the DGEE; and work more closely with INDECOPI to combine efforts and collaboration in the pilots.	MINEM, INDECOPI, Project team
	<i>NAMA Grid Connected RE</i>	
E.7	Intensify collaboration with the private sector and organizations of microfinancing for the design of business models suited to the supply and demand for energy, that stimulate and promote joint efforts	MINEM, DGEE, Project team
E.8	Intensify the efforts and coordination to attain a positive change of the rules; and develop a pluri-institutional strategy, at the highest political level, to overcome barriers and the remaining resistance that preclude the development of the RE in the market and its incorporation to the system.	MINEM, DGEE, DGER, OSINERGMIN, MEF, and Project team
	<i>NAMA Electric Transport</i>	
E.9	Include the Ministry of Transportation (MTC) in the CDP and participate actively in the current discussion of the activities of the Project in terms of its implications in the establishment of the new Authority of Transport of Lima and its statutory regime. At the same time, continue the initial coordination and expand it to private and professional organizations related to transport, for a better design and dissemination of the pilots in preparation, including interaction with the current GEF e-mobility project under development.	MINEM, MTC, Project team

2. Introduction

2.1 Purpose and objectives of the MTR

The purpose of the mid-term evaluation of the Project 'Appropriate actions of mitigation (NAMA) in the energy sector and its final use in the Peru', hereinafter the 'MTR' and the 'Project', is to determine the progress in achieving the objectives and expected outcomes of its execution, in the terms provided in the project document (ProDoc) and annexes, the logical framework and the adjustments introduced in the strategic framework.

The MTR also assesses the Project general operation, from the baseline data established in the beginning, to the review implementation strategy relevance, and the various sustainability risks. In this context, the MTR should be a factor of change and support in the accountability of the Project. In short, the MTR is expected to contribute to:

- a. strengthening the functions of oversight and management of the Project;
- b. ensuring accountability for the achievement of the objectives of the Project and UNDP/GEF, and encouraging responsibility in the use of resources;
- c. improving organizational learning with the documentation, feedback and dissemination of lessons learned; and,
- d. allowing for informed decision-making.

The MTR is part of the TdR for this consultancy, which refer in turn to the Evaluation Plan 2017-2021 of the Peru Office of UNDP, the guidelines for assessment of UNDP and GEF documents, and to the achievement of the expected outcomes in the UNDP Country Program, and contributions to the respective Strategic Plan².

2.2 Scope and methodology.

2.2.1 Principles of design and execution of the MTR

The MTR considers that the Project is part of a national policy attending to the international commitments in front the UNFCCC, in terms of collaborating in the global reduction of greenhouse gas emissions through 'mitigation actions'. International technical and financial support in NAMA activities for developing countries, provide Peru the resources to comply with this obligation of global interest. Even if the country's energy grid is not a prominent GHG emitter, emission reduction measures - either by energy efficiency change or non-traditional renewable sources - are key to lay the groundwork and make progress on a path of sustainable development, compatible with a global

² Guidance for Conducting Midterm Reviews of UNDP-Supported and GEF-Financed Projects (<http://web.undp.org/evaluation/guidance.shtml#gef>).

trend of energy adaptation to climate change, and the context for competitiveness of the country in the long run.

The MTR of the project is relevant in dealing with an innovative project, that has received in its design the experiences of other countries and has an advanced technical approach. The MTR is guided by the respective TdR, which properly includes aspects that should be considered to detect the direction and progress of the Project, in time to consider corrective measures and detection of barriers and difficulties. In addition, the MTR considers other aspects and problems, or underlying virtues in the Project, that the experience of its implementation is revealing; and proposes courses of action, adaptive processes and measures that will help to increase its impact, beyond the full implementation of their goals.

2.2.2 Approach, methods of collecting data, and limitations

The evaluation of the project was conducted based on information provided by the team of the project and the UNDP, which is considered reliable and appropriate. Relevant information has been obtained from documents elaborated during the phase of preparation of the Project (Project Identification Form, PIF; ProDoc; report of the inception workshop; quarterly and annual reports of the 2016, 2017 and 2018; Project Intermediate Reports of 2017 and 2018; annual plans of implementation and budgets; and technical studies of diagnosis and proposals for implementation of the NAMA; among others. (See Annex **E**).

As part of the collaborative and participatory approach, interviews and meetings were conducted with the technical team of the Project, members of the Directive Committee (CDP), officials of UNDP, and key actors in the public and private sector, unions business, companies and consultants involved in the realization of studies, workshops, service contracts, and others. For this purpose, a battery of questions and discussion topics were prepared (6 questionnaires adaptable ad-hoc, with 66 questions in total), focused on the main themes of the evaluation prescribed by the TdR. The preliminary results of this phase of the MTR were presented at a brief meeting of 'end of mission' with the project team and members of the CDP. (See Annex **F**).

A total of 32 persons from 19 entities (7 public, 3 of international cooperation, 4 associations, 2 NGO/consultants and 3 private companies) were interviewed, selected according to the requirements of the TdR and suggestions from the Project team and officials. (See the questionnaires and people interviewed in Annex **G**).

Some limitations to comply with the directives of the evaluation arose, mainly in the time constraints, due to the time of start (end of year that coincides with festivities and vacation holidays leaves or travel of several key actors, that caused a delay of 15 days to begin interviews. Other limitations of conceptual order and knowledge of the Project emerged during interviews, limiting the quality of information and contributions or suggestions, due to the limited knowledge of the characteristics of the Project, and the concepts of the NAMA and its relevance in the reduction of GHG emissions.

2.3 Structure of the MTR Report.

The report of MTR consists of annotated description of the Project and its context, in terms of its relevance, problems of design, development strategy, execution and efficiency in terms of compliance with deadlines, adaptive management, outcomes and budget execution.

Special attention has been placed in achievements towards the objectives and the indicators for each component, whose scope have been measured and qualified based on the auto reported advances in PIR 2018 (up to June), that have been supplemented with progress directly reported until December of 2018, indicating in each case the barriers and difficulties found and how are being addressed. Achievements have also been evaluated with the contribution specialists and officials interviewed.

In addition, is the analysis of forms of execution of the Project, planning and management mechanisms, prevision of monitoring and evaluation, and stakeholder engagement strategies. Finally, there is an analysis of the risks and assumptions of financial, socio-economic, institutional, governance, and environmental sustainability; as well as an appreciation of the contribution that represents the Project outcomes to the UNDP country program, its strategic plan and the goals for sustainable development.

The report ends with a section of conclusions, based on the evidence and data collected, and in relation to the proven facts that highlight the strengths and weaknesses of the Project and the results achieved; and with a synthetic set of consequential recommendations considering corrective or enlargers of benefits, and proposed actions to optimize the execution in the rest of the Project implementation period.

A set of annexes is included at the end, in compliance to formalities contained in the TdR of this consultancy.

3 Context and description of Project

3.1 Context of national development and the energy sector.

Peru, despite not having an aggressive national policy of change of energy sources in its economy, but rather one of gradual appropriateness and opening to the new generation and energy efficiency technologies, has made significant progress in the last decade from the Ministry of Energy and Mines (MEM), with energy efficiency projects, promotion of projects of solar and wind energy, geothermal energy exploration and others, especially in more recent years.

The Project under evaluation joins these efforts and is part of the previsions of the commitment of Peru to the climate change convention - today on way to be formalized through the NDC - and has a history of analysis and studies to this purpose, including work on commissions and multi-

sectoral groups, and reports of the PlanCC project, plans and sectoral projects in course, and organization and call to private interests from MINEM for their strengthening.

In this context, the start of the activities of the project marks a milestone that is important to follow closely and assessed, both as a country's commitment, as for being a valuable experience of innovation in the sector and forecasts for their development in the medium and long term. Innovative projects and others of pioneer nature, in the context of the 'state of the art' in the country, usually present unforeseen difficulties of implementation and address barriers to economic, technological, political, and institutional inertia which must be laid down, prevented and resolved.

In the present case these difficulties have been properly diagnosed, and there is a potential for viable and effective responses. It is required, however, to opportunely recognize its incidence and consider appropriate alternatives - experienced in other countries and economies - in order to adapt them to the special conditions of Peru and to political requirements of maintaining a growth rate that is considered a national priority, which eventually conditions the introduction of technological changes.

3.2 Issues addressed by the Project.

The project aims to strengthen the capacity of the country to meet the challenge of future energy development. The energy policy of the country, scheduled for 2010-2040, sets goals of "... support the diversification of the energy matrix with emphasis on renewable energies and energy efficiency, and develop an energy sector with minimum environmental impact and low carbon emissions". These objectives derived in the Plan in a consistent set of specific policies to implement them.

As part of implementation of energy policies, a series of rules and concurrent regulations have been established, being the most important: the law for the promotion of investment in generation of renewable energies (D.L.N ° 1002, 2008) and its respective regulations that established bidding processes with priorities and incentives for renewable energy; law of promotion of the efficient use of energy (Law No. 27345, September 2000), whose regulation promotes the culture of energy efficiency and establishes sectoral programs; the law for the promotion of biofuels (law N ° 28054, in 2003), which establishes the legal basis for the production and marketing of biofuels and their incorporation into the composition of the gasoline; and the "Plan for Universal Access to Sustainable Energy - 2013-2022" (R.M. 203-2013-MEM-DM, may 2013), which promotes the access of the population to electricity, lighting, communication and community services, and access to technology and fuel for heating and cooking.

The Plan is implemented through the resources of the Social Energy Inclusion Fund – FISE, created by Ley n ° 29852, and the resources for the National Electrification Plan 2013-2022, among others. During the implementation of the Project, other measures and binding mechanisms have crystallized, partly as a sectoral context, which is the case of the elaboration of the NDC from 2016; and partly as a result of national policies concomitant with the objectives of the Project, such as customs and tax provisions that encourage electric transport.

Propitious circumstances to the Project emerged, at the same time, from the negotiations at the UNFCCC and the commitments to reduce GHG emissions that the country has assumed in the framework of the Paris Agreement. Meanwhile, a significant experience has already been achieved in this field through the clean development mechanism – CDM and carbon markets.

With all these national problems already identified, and the forecasts for their treatment through the legal norms, a channel was opened for the design of a set of activities to promote and adopt energy efficiency measures and generation of energies by renewable sources, which gave place to the opportunity to execute the Project.

3.3 Project design: objectives, components, indicators, outcomes expected and conditions for its implementation.

3.3.1 Objective of the Project and NAMA determination

The stated objective of the Project is: "To support the Government of Peru in the development and implementation of National Appropriate Mitigation Actions in the energy sector". This objective is linked in parallel with the achievement of the objectives that are established through the contributions of reduction of GHG, determined at the national level (NDC), which today are part of the commitments acquired by Peru with the agreement of Paris in front of the UNFCCC. The reduction mechanism is assimilated to the generic notion of NAMA, as a set of appropriate actions and activities to reduce GHG emissions.³

This is how the Project was formulated to support the design and implementation of a group of NAMA in the energy sector, the application of methodologies and guidelines relevant to their identification and design, and the definition of the activities relevant to each NAMA, including the implementation of the respective monitoring, reporting and verification components of the progress in their implementation (MRV).

The original design of the Project selects three subsectors to form NAMAs: (i) grid-connected renewable energy (except for large hydropower plants); (ii) Non-connected renewable energy; and (iii) end-use of energy, related to energy efficiency. Based on the initial analysis of the Project development, the conformation of four NAMAs was defined, covering the three subsectors mentioned:

- 1) Promotion and optimization of clean technologies in areas not connected to grid, considering the potential of renewable resources for electrification, heating, and cooking, among other uses. This NAMA has been called "Universal Access to Sustainable Energy" and is part of the scope of existing sectoral plans and ongoing projects. It includes actions linked to both the power generation with photovoltaic panels (SFV), already in execution, and the promotion of

³ NAMA stands for *National Appropriate Mitigation Actions*, the mechanism agreed in the UN Framework Convention for Climate Change in December 2007, in order to homogenize and regulate the contribution of the developing countries to the voluntary reduction of GHG emissions.

clean cooking in households through improved stoves and appropriate technologies, which also has experiences in progress, collected for the design of the NAMA.

- 2) Promotion of energy efficiency measures through labelling programs; minimum energy consumption standards⁴ (MEPS); transformation of the lightning market; energy audits in the public sector; guides of efficiency in the private sector; and evaluation of other adjuvant measures. This NAMA collects the progress of other projects, pre-existing or already initiated, susceptible to be considered in this NAMA category and mechanisms.
- 3) Substitution of the energy matrix in the transport sector, through clean technologies, by promoting and implementing electric or hybrid terrestrial transport. This inclusion was done after the initial definition of the ProDoc and responds to convenient circumstances and the recent technological development in electrical transport.
- 4) Promotion and development of non-conventional renewable energy (ER) connected to the grid: wind, solar, biomass, hydroelectric power less than 20 MW, geothermal or tidal. These activities are now more effective because they have had accelerated development in the country, after the formulation of the Project, promoted by legislation and *ad-hoc* auctions, in alignment with the world technological progress in this respect, and the natural conditions of Peru in this context.

In short, there are two NAMAs of renewable energy - connected and not connected to the grid - and two NAMAs based on energy efficiency and end-use energy. This composition of actions in the NAMAs seems rational and necessary in the context of the energy reality in the country, but raises the need for an adequacy of the forecasts and indicators of the ProDoc: Although the previously selected subsectors coincide and are maintained, the main objective of reducing emissions, the means for achieving energy efficiency through the current project and the electric transport, require more precise and *ad-hoc* indicators.

On the other hand, the original number sequence of the activities of the NAMA, both in the ProDoc and in the internal documents of the Project, has been altered. In this MTR the order maintained is the one used by the Project team in practice, that appears in the matrix of achievements and results. It would be desirable, in the future, to consistently correct the respective indicators as relevant.

The key objectives and indicators for the success of the Project, defined in accordance with the GEF's Central objective are:

- *Energy Efficiency:*
 - o Development and implementation of policies, norms and regulations to promote the transformation of the energy efficiency market in the public and private sectors, in order to achieve large-scale impacts in terms of energy savings and reduction of GHG emissions.
 - o Promote energy efficiency technologies and practices in industrial production and manufacturing processes.

⁴ These standards are presently being applied to the public sector; authorization of the MEF for its application to private sector has not yet been granted.

- *Renewable Energy:*
 - Promote investment in competitive renewable energy technologies
 - Promote the development of favorable policies and a regulatory framework for investments in renewable energies.
 - Increase investment in competitive renewable energy technologies.
 - Establish the potential of avoided GHG emissions.

- *Support to the UNFCCC:*
 - Support and capacity-building activities under the Convention
 - Allocation of appropriate resources to support the activities within the framework of the UNFCCC.
 - Improving human and institutional capacity in the recipient countries.

3.4 Mechanisms and Project execution scheme.

3.4.1 Components of Project execution

The components of the Project have been defined in terms of their respective expected Outcomes, in the following terms:

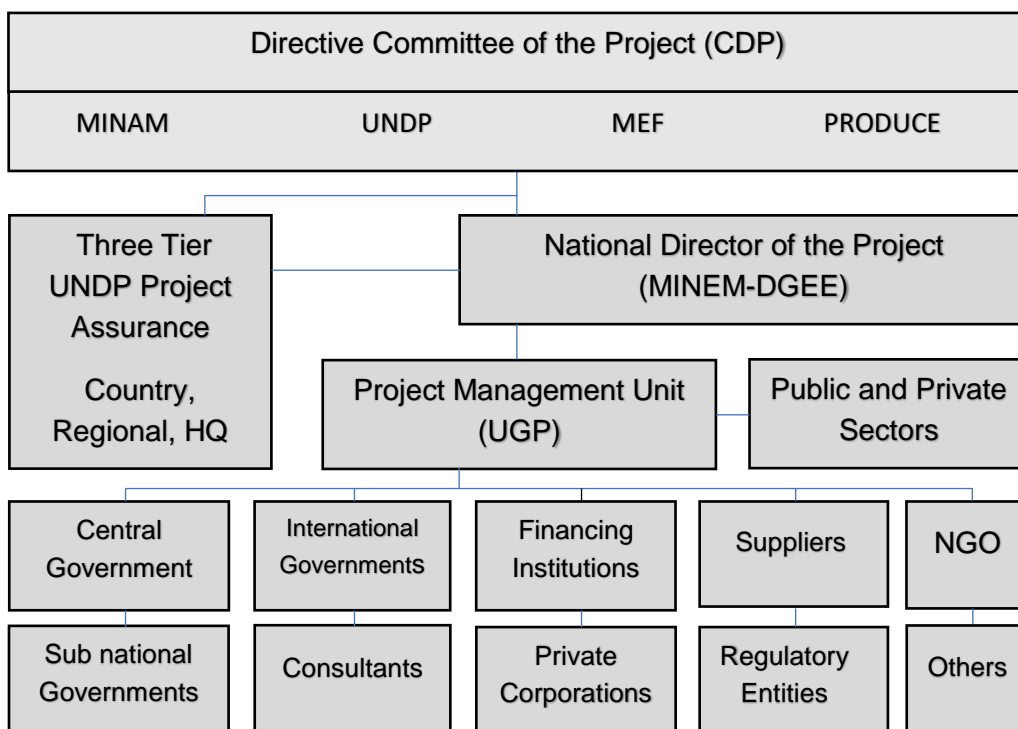
- Outcome 1:* Established national and regional GHG emission BAU reference baseline for the energy sector.⁵
- Outcome 2:* Prioritized mitigation options and marginal cost of emission reduction curves (MACC) are identified. NAMA Design Documents are developed in the selected sub-sectors (new renewable energy sources both connected and non-connected to the grid), and 4 NAMA activities are ready for implementation.
- Outcome 3:* Entities related to renewable energy connected to the grid (all technologies excluding large hydro) and off grid renewable energy subsectors are implementing prioritized NAMAs in a piloting phase and contributing to the achievement of Peru's voluntary mitigation target.
- Outcome 4:* Accurate mechanism for measurement and accounting of actual GHG emission reductions from mitigation actions in the energy generation and end-use sector, are in place.
- Outcome 5:* Project management.

⁵ The regional figures have been excluded in the course of this Outcome implementation, due to lack of reliable data and nonexistent means for its collection.

3.4.2 Project execution scheme.

The current scheme of for the Project execution is derived from the ProDoc, expanded at the inception workshop with some clarifications, incorporation and reference to new entities, as presented in the following chart.

Chart 1. Scheme for the Project execution



The Ministry of Energy and Mines (MINEM) is the executing agency through the General Directorate for Energy Efficiency, which assumes the national direction of the Project, and contains the project management unit (UGP), in charge of the coordination and direct execution. The National Project Director chairs the Project Directive Committee (CDP), which is integrated by the accredited representatives of the Ministry of Environment (MINAM), the Ministry of Economy and Finance (MEF), and the UNDP representative. A representative of the Ministry of Production (PRODUCE) has been incorporated in 2018; and the incorporation of a representative from the Ministry of Transport and Communications is in progress. These additions respond to the need to coordinate the implementation of the NAMAS already designed.

UNDP provides a three-tier supervision, oversight and quality assurance role – funded by the GEF agency fee – involving UNDP staff in the Country Office and at regional and headquarters levels. Project Assurance is totally independent of the Project Management function. The quality assurance role supports the Project Board and Project Management Unit by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project

management milestones are managed and completed. This project oversight and quality assurance role is covered by the UNDP in its function as the GEF Implementing Agency.

The Regional UNDP office in Panama (UNDP-GEF) maintains a relevant link role and coordinates directly with UNDP Peru, such as it is shown for implementation at the country level.

The Steering Committee (CDP) was established at the beginning of the Project to monitor the progress, guide its implementation and support in the scope of the respective achievements. The CDP strategically orients the National Direction of the Project, and for the incorporation of additional members who are considered necessary for his best performance.

The Project management unit is responsible for executing the action plan approved by the CDP, and maintains relations with governmental and private stakeholders, as well as NGOs, specialists and consultants.

3.5 Timeframe for execution and level of relative progress.

The ProDoc sets an execution timeframe of four years and eight months, from October 19, 2015 up to June 22, 2020, with an investment of US \$4.5 million, to run until the end of 2019. There was a retard due to domestic political reasons, and also technical and interinstitutional difficulties for coordination at the start of the Project (seven months from the date of signature of the ProDoc until the hiring of the Coordinator on April 1, 2016), which meant a considerable delay for the implementation of the components and the respective results.

The delay, in addition to the factors of political and technical context of the country, is also explained by the insufficient national progress in the rather new and highly specialized issues dealt by the Project at the time of its design and implementation decision. The NAMA concept had a recent inception in the negotiations, and the themes of reducing GHG emissions just pointed in the perception of the productive sectors and companies in the country. On the other hand, the scant supply of specialists in the subject hampered recruitment for the position of Coordinator, which required successive calls.

The components of the project are derived directly from the expected outcomes and coincide on nomenclature and sequential order. The sequence suggested by the components, ranging from the development of non-existent baselines until the details of follow-up in the implementation of the NAMA, has not conditioned a rigid sequence of actions, allowing some flexibility and simultaneous activities for the first three components, whilst the fourth component could not start waiting for substantial progress in the third one.

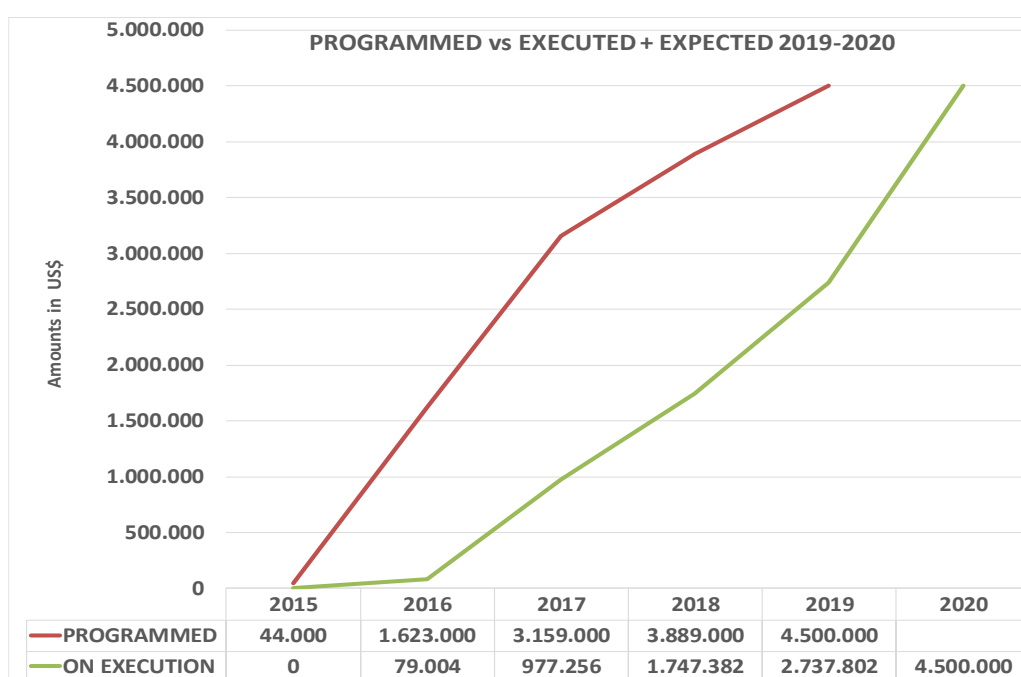
Because of delay in the onset of the Project and the need to speed up actions and progress in components, some important decisions were taken in the inception workshop (June 17, 2016), after installing the CDP (May 4, 2016) and the recruitment of the Coordinator and key personnel for the Project team (May 10, 2016).

From that moment on, the Project acquired a greater dynamism, reflected in the activities reported in the quarterly and annual management reports, and on the respective PIR.

The comparative evolution of budget execution is displayed in the **Graph N°2**, which reveals the "learning curve" that has been inevitable, and the need to increase the pace of spending for the years 2018-2020. Is evident in the curve the need to extend the execution period to meet the investment goals and targets, originally raised for the 2019, considering the current execution of **39%** to MTR, and that the original figures meant a much greater curve gradient for investment, which now only would be achieved during 2019-2020.

Details and reviews of progress and achievements by component, as well as on the budget execution and future forecasts, are discussed in section **4.3**.

Chart 2 Real vs Programmed Budget execution



Source: ProDoc, Project data and own elaboration. Investment amounts for 2019 and 2020 are preliminary estimates based on the tentative action plan presented for 2019 (Jan).

3.6 Main Stakeholders

The main agencies involved are from the GoP: Ministry of Energy and Mines – MINEM, that runs the Project through the Directorate-General of Energy Efficiency (DGEE), with the collaboration of the Directorates-General of Rural Electrification (DGER) and electricity DGE); the Ministry of the Environment - MINAM, as the national governing body on climate change and reduction of GHG emissions; the Ministry of Economy and Finance - MEF, through the general direction of matters of international economy, competition and productivity, and the rector of macro-economic policies and public budget. These entities, along with the UNDP Peru, through its energy and environment officer, formed the original CDP of the project; Subsequently the representatives of the Ministry of

Production (PRODUCE), have joined through the Environmental Directorate-General, and the Ministry of Transport and Communications (MTC) is in the process of incorporation.

The entities that make up the CDP are in turn which contribute to the co-financing of the Project, as the executors of two converging projects to the goals of the NAMA Project, with a total of \$32 010.000

o MINAM	\$US	800,000
o MINEM	\$US	20,800,000
o MEF	\$US	9,350,000
o UNDP	\$US	1,060,000

Total co-financing: \$US 32,010,000

As collaborators and participants in the various activities and formulation of diagnostics and NAMA, there is a wide range of other governmental, ministerial, regulatory and technical entities; as well as the national and international technical cooperation sector, private sector companies, financial institutions, business guilds, independent companies and consultants, and NGOs. In total, 30 representatives and actors from 19 entities, that have been interviewed for the purposes of the evaluation.

4

4. Findings

4.1 Strategy and results of the Project

4.1.1 Strategy of the Project

The project strategy is not subject to evaluation in this instance. It is noted, however, its effect on the perception of sectoral and national development – mentioned by several interviewees – as is said that it overlays the interest in direct GHG reductions over the political, economic and social conditions that should be addressed in first place, as central to the problem of development. **This perception is important when considering that the problems of technological and cultural change require a wider interinstitutional approach rather than a sectoral or sub-sectoral approach; and are more relevant in the case of activities covering social and cultural aspects which are not the central objective of the sector in charge of the Project execution** (e.g., improved kitchens, rural electrification, and transport), but that are fundamental to their adoption by the users and beneficiaries.

Although Peru has a background and advances of other initiatives and converging projects (energy efficiency, renewable energy auctions, diffusion of SFV, improved kitchens), the Project maintains an innovative and relatively unprecedented inception in the form of the NAMA. The

demanding technical characteristics and baselines, coupled with the relatively low implementation pace of similar NAMA that could serve as a guide, limited the dynamics that required the execution of the Project in the envisaged terms of time, construction of enabling conditions, investments and interinstitutional consultation. Concepts and previous advances were included in the design, but the openness to work in the continuity of the previously achieved was limited, since the effort was concentrated in the terms of the ProDoc and the peculiarities of the NAMAs, the accounting of the emissions, and the monitoring systems.

Notwithstanding these signs, there is a consensus in opinion among the stakeholders of the government and private sector, on the importance of the Project in terms of the progress it means in the context of climate change and for the needs of renewing the energy matrix of the country, whose resources for this purpose are abundant and adequate.

Gender issues are relevant in the planning and implementation of the Project, and are mentioned in the ProDoc, even if there is no specific indication of activities or indicators that orient their impact and allow their measurement. In practice, although it has a line of work in the Project to address the gender topic, it has been treated in generic terms focusing on the proposal to shape and activate a 'Technical Institute for Women' whose conception is laudable, but should relate and interact with current parallel initiatives to generate institutional and social links for concrete actions. The issue is relevant for all NAMA, and especially for its implementation in the rural area, where in addition cultural determinants are present. In this regard, it should be assessed what will happen with the pilot actions in this initiative, which are being prepared for two to four regions of the Andean and Amazonian areas.

4.1.2 Project Results Framework Analysis

The original framework of results and logic of the Project does not reach the technical precision that would have been desirable for a project of such scope and technical characteristic. The lack of data and background in the issue of reducing GHG emissions in the country, conspired against a more concrete design which responds with greater solvency to the "SMART" criteria, especially in the attributes of specificity, quantification, and the deadlines necessary to reach the targets.

On the other hand, in compensation, the design is flexible and allows ample margin of fulfillment, for the same reasons of generality, with opening to innovation and precisions during the development of the initial actions (Outcome 1), which are oriented to build baseline and reference data in their absence or insufficient time. The structure of the components of the Project, assimilated to the expected results, is – in some way – sequential in terms of the dependency of each result in relation to the advance of the former. This has not impeded simultaneous progress in the following components, feeding back the actions with the immediate results of the preceding components.

No doubt, the half-way status the Project deserves a revision and clarification of the current indicators for attaining greater ambition and scope, taking into account the achievements already reached, and redefining targets for the end of the Project, anticipating even its period of Implementation and further sustainability. In this aspect a repeated suggestion has been collected

in the sense of having a long-term roadmap that provides for the needs of continuity, monitoring and consolidation of the processes initiated.

Indeed, a problem of the evaluation is that, given the generic description of the indicators and the broad definition of the targets of the Project, many achievements – even those with questionable permanent or long-term effect - could be qualified as “satisfactory” in a broad sense. This MTR fulfills objectively to qualify the achievements towards the expected results according to the indicators of the ProDoc; but it stresses the need to refine the indicators and targets with a view to a final evaluation germane to the evolution of the Project in its implementation phase, and in relation to the energy and environmental situation of the country.

As said before, the incorporation of gender issues is transversal to the results but has not been identified – beyond the initiative of the Women's Technical Institute – specific activities related to the progress and achievements at this stage, which incorporate a robust vision of the subject in the NAMA design. This will be a line of work that should be incorporated in the work plans with more precise indicators and with greater relation to the central activities of the NAMA.

During the inception workshop some terms, indicators or sources of verification of the ProDoc were clarified and modified in a way this MTR assumes as agreed and has analyzed and valued the results accordingly. The main ones, apart from the definition of the NAMA, as mentioned above, discussed with the participation of the CDP, refer to the following sections of the Spanish version of the ProDoc:

- There is still no "MRV record", so it is not possible to use it as a verification source (p. 54).
- Final goal of the Project should be 5%, as it is the official goal of the GoP, instead of "2.7% of non-conventional renewable energy participation..." (p. 55)
- Must read “50MW” and not “50MV” in: "Not connected to the network – at least 50 MV of additional generation outside the network" (p. 56)
- The goal of "reducing direct emissions in approximately 962,000 tons of CO2 in 10 years" is maintained. Reduction of indirect emissions in 1 600,000 of CO "in 10 years...", with the remark that observation that they are lower than those expected for the Project, and not aligned with the national objectives for the sector (p. 56, 58.59).
- It is observed that the effort to reach the baselines and inventories as mentioned in Outcome 1: "... At the national and regional level of reference BAU... ". Across the country, it exceeds the possibilities of the Project; it will be considered for regions linked to the NAMA (p. 56)
- it is mentioned as source of verification to the inventory procedure one "... TUPA modified by the responsible entity modified ". This requirement does not exist for this procedure nor is considered necessary, (p. 56).
- The indicator on the BAU said "... systematized BAU and Baseline reports.... for the selected subsectors during 2014 and for a period not less than 2013 to 2021 ". It has been agreed that it should be ' for inventory at 2014 '; and, at the suggestion of the MINAM, expanded to 'a range no less than 2010 to 2030 ', in predictable alignment with the NDC. (p. 57)
- Change the goal of "... BAU Reference baselines approved for the first quarter of the 2016 ". At that date, actions had just been initiated, so it should be assumed as ' in the year 2017 ' as justified in the respective PIR. (p. 57).

- Change the indicator "... 1 Sector Mac curve and 2 sub-sectoral Mac curves ", with a "...report of the Mac curve in the sectors and subsectors in and out of the energy grid", taking as a basis the curves already developed by the 'PlanCC' project of MINAM, that can be updated and adapted to the NAMA. (P. 57).
- The source of verification relating to 'training' sessions', should be translated as '*capacitación*', and not as '*entrenamiento*', that has a different connotation in Spanish. (p. 58).
The final goal of the Project stated "... 500.000 PV Panels", while the actual executing entity for this item has established the final goal of '200.000 panels' (p. 58).
- Clarify the indicator that reads "Integrating climate change mitigation into the results-based budget program of the Ministry of Economy and Finance", which does not refer to the specific program and the resulting feasibility that should be consulted with the MEF. (p. 60).
- Target and indicator relative to follow-up and MRV that the follow-up protocols apply to each NAMA in a relative manner, and not to all energy activities. (p. 60)
- CDP agreed to modify the provisions of the following roles and responsibilities: "The national project Director will participate as a non-voting member at the CDP meetings". to "...participate in the CDP with the right to vote. (p. 67).

4.2. Analysis of progress towards results

4.2.1 Analysis of progress towards results

The valuation of the achievements in the annexed matrix and in this summary is referred to the current indicators. The valuation in 'yellow' is predominant because of the several achievements in process, explained briefly in the final column of justification in the annexed table (**Annex A**), and in the following summary. In general, and for the case of a Project that has had an appreciable delay in its beginning, plus changes of technical and political context after its formulation, the achievements can be described, on average, as **moderately satisfactory** to **satisfactory**, with a foreseeable tendency to improve in the remainder of the execution of the Project. No situations have been detected that should be qualified in this instance as a high-risk issue.

In short, the achievements reported and proven, in relation to the indicators per Outcome have been valued according to the table of valuation of 6 points (**HS**=Highly Satisfactory; **S**=Satisfactory; **MS**=Moderately Satisfactory; **MU**=Moderately Unsatisfactory; **I**=Unsatisfactory; and **HU**=Highly Unsatisfactory. The colors correspond to the respective code (**green** = attained, **yellow** = in way of being achieved, and **red** = is not on the way to be achieved):

Project Objective:

Support the government of Peru in the development and implementation of National Appropriate Mitigation Actions in the energy sector.

- *Baseline emission trends*

(S)

The official GHG inventory for the year 2014 in the energy and subsectors sector, and the annual associated report (RAGEI) are available; the inventories for the years 2015 and 2016 have

also been presented, approved and published by the MINAM. The GHG report (RAGEI) is being completed for the year 2016, which incorporates the current national energy balances developed by the Ministry of Energy and Mines. These inventories are inputs to determine the baseline conditions (BAU) in the design of the four NAMA.

Having the baseline of national inventories is a satisfactory achievement; even if it is not yet possible to have up-dated data, and homogenization within the framework of the INFOCARBONO is pending.

- *NAMA Portfolio in the energy generation and end-use sectors.* **(HS)**

The four NAMA design approaches have been revised, based on the mitigation measures and the MAC curves evaluated by the PlanCC project, and in the diagnostic studies carried out by the Project, which assessed multiple mitigation options based on criteria reported (PIR 2017). The approved diagnostic studies are available at the Project website:

<http://namasenergja.minem.gob.pe//es-pe/estudio>

Diagnostic studies and the formulation of MAC curves are important and timely achievements of the Project, as they are the definition of focus of the selected NAMA, evaluated under various relevant criteria.

- *Implementation of, at least, two NAMA in off grid and on grid renewable energy generation.* **(MS)**

The rural electrification component of the NAMA 'Universal access to Sustainable energy' (formerly referred to as 'Off-grid RE') is in execution, with a report of about 100.000 PVS installed until the end of 2018. The remaining 100,000 would be installed in mid-2019.

The NAMA designs of 'Universal access to Sustainable energy', and grid connected renewable energy (RE connected) have been presented to the Directive Committee and delivered to the MINAM. The Committee made comments to the NAMA grid connected renewable energy, which have been incorporated into the final version formally delivered to the MINAM as part of the sectoral tentative programming of the NDC.

The proposal to change the Firm Capacity calculation procedure for non-conventional renewables (enabling condition) has been pre-published and is in the finalization phase (enabling condition).

The pilot for installation of eight 3KW PVS was initiated in the Ministry of Energy and Mines headquarters and in seven public universities, to support and promote a better understanding and incorporate it into the scholar curriculum. Collaboration with US government agency, NREL, continues to develop the solar map, for public use in Peru, and to provide information for the development of individual solar systems across the country. (<https://maps.nrel.gov/rede-peru/>).

The achievement is considered moderately satisfactory in terms of implementation, since the remainder subsidy needed, and other operating conditions, still require completion and implementation for sustained operation.

- *Implementation of, at least, two NAMA in energy efficiency (end use of energy)* (MS)

This indicator refers to the NAMAs of energy efficiency and electric transportation, which were included after the Project starting, by a concerted modification of the foreseen names and structure of the ProDoc. Achievements in this line are considered moderately satisfactory (see details under **Outcome 3**) since they must be completed by attaining specific regulatory and market-enabling conditions which are in process, with approval not yet ensured and requiring coordination and political promotion at the highest governmental level.

- *Establishment and operation of MRV protocols* (S)

The MRV protocol design and the initial operating stage for the four NAMA have been completed: Energy efficiency, electric transport, connected RE and Universal access to sustainable energy. MRV systems have been formally sent to the MINAM as part of the sectoral tentative programming for NDC mitigation measures.

Designs and protocols have been satisfactorily completed; approval and operation as part of the final programming of the country NDC is pending.

- *Renewable energy generated by on and off grid sources.* (MS)

The target of 3.5% of RE was exceeded, with a total participation of 4.69% RER at the end of the year. As for the systems not connected, about 110.000 PVS have been installed to date, as a result of the massive government auction program. It is estimated that the remaining PVS of the program will be installed in mid-2019 to reach a total of 199,000. The project has already included the estimates of GHG reductions, associated with the first four RE auctions, in the designed MRV system of the NAMA RE connected.

The target in reference has been overcome in principle, thanks to the rural electrification project. There remain doubts about their maintenance over time and the level of functioning of the systems installed, which will require an *ad-hoc* evaluation, which should be part of the 2019 work plan.

- *Direct and indirect GHG emissions resulting from the Project* (S)

MRV protocols are in process of implementation. To date, it is estimated that the four NAMA of energy would have already exceeded in 2017 the target of direct reduction of emissions of 962.000 Tm of CO₂, with more than one million mitigated. From the point of view of the Project, the

achievement is considered satisfactory, even when it is necessary to consolidate the implementation of the MRV and to verify the reduction figures with data from the field.

It is important to review and redefine this indicator during the remaining period of the Project, in order to clarify the scope of the activities and its impact in the emission reductions in the energy sector.

Outcome 1:

Established national [and regional] GHG emission BAU reference baseline for the energy sector

- *Procedure for GHG inventory validated by the energy authority, in coherence with INFOCARBONO (formerly 'InformaGEI') and the National Energy Balance for 2014.* (S)

The official GHG emissions inventory for 2014 is already available, as well as the associate annual report (RAGEI); both have been completed, submitted to MINAM, approved and validated. Official publication is pending.

The Project, along with the DGEE is preparing the 2015 and 2016 inventories and is completing the RAGEI for 2016, which includes the updated report from the national energy balances elaborated by the Ministry. Inventories have been an input to determine baseline conditions (BAU) in the design of the four NAMA.

In reference to the targeted Outcome, to count on a baseline on national inventories is a satisfactory achievement, even if it is not yet possible by now to have more updated information, and homogenization of procedure is still pending within the frame of INFOCARBONO.

- *A final report of an inventory of greenhouse gases based on the procedure approved divided by sub-sector, developed during the year 2014.* (S)

The project in conjunction with the DGEE is developing inventories for the years 2015 and 2016; and the GHG (RAGEI) report is culminating for the year 2016, which incorporates the updated national energy Balances prepared by the Ministry of energy and mines this year. Formulated inventories have been input to determine the baseline conditions (BAU) in the design of the four NAMA elaborated by the Project: electric transport, RER connected, energy efficiency, and Universal Access to Sustainable Energy.

- *BAU systematized and publicly available reference baseline reports for the selected sub-sectors during 2014 and for a period no shorter than 2013-2021.* (MS)

The Project has completed the process of validation of the calculation procedure and the corresponding emission factor of the national grid (SEIN) for the year 2016, having submitted it to UNFCCC for approval. The Project continues the studies to assess the emission factors for lumber

or cooking, and for fuels in the transport sector, in order to determine national appropriate values for these sectors that will be considered for the BAU and national inventories.

Ten (10) mitigation measures prioritized in the four NAMA, communicated and incorporated as part of the national NDC, have been updated with more realistic goals, targets and mitigation measures, looking forward their inclusion in the BbR national system.

The achievement is important and relevant but is on the way for completion with ongoing studies on emission factors in two of the NAMA.

Outcome 2:

Prioritized mitigation options and MACCs are identified; NAMA Design Documents are developed in the selected sub-sectors (new renewable energy sources).

- *1 sector wide and 2 sub sectoral MAC curves.* (AS)

The MAC Curve, originally devised as a part of the PlanCC project, has been up dated and included in the detailed design of the NAMAs. At the present stage, mitigation costs are focused more in evaluations of options and alternatives and implementation issues. MAC curves are appropriate tools for the NAMAs, so its updating is considered a good practice and proper experience of the Project

- *Portfolio of NAMA activities and NAMA factsheets.* (S)

Designs for all four NAMAs have been completed and presented to de Directive Committee whose comments and remarks have been incorporated to the final published versions in the Project web page. Has also been formally submitted to MINAM as part of the tentative sector program for the NDC. The Frame Law for Climate Change has been issued and its statutory regulations, currently under elaboration, will include the mitigation measures related to the NAMAs.

The achievement in this line is considered satisfactory in terms of the indicator stated, since the portfolio and factsheets are now complete. Full achievement will be attained with the final approval and inclusion of the NAMAs in the NDC country commitment.

- *Policy and finance instruments for NAMA implementation in two selected sub sectors defined.* (MS)

There are various policy instruments that have been defined as enabling conditions for the NAMAs. Those are included in the detailed designs of the NAMAs and have been presented to the respective institutions during technical and directive committee meetings.

No significant advances have been reported for this indicator since June 2018. Policy instruments that are considered enabling conditions are still under consideration for official approval; indicators for this result should be defined more precisely and individually by NAMA.

- *3 formal training sessions by sub-sector, related to the design of mitigation programs.*

(S)

Training sessions have been held in each year of work, the last one in July 2018, completing all three sessions. The project has conducted a workshop and course for the MINEM and stakeholders in the public and private sector, on the tools for the use and planning of renewable energies, including the solar map and the SAM tool developed by NREL. The workshop trained on instruments for the public using renewable energy resources, and for the MINEM Planning Unit.

The target has been attained in terms of the number of training actions. Because of the remarks mentioned as baseline constraints in the ProDoc, ex-post verification for efficacy of training actions should be conducted.

- *Four NAMA detailed designs in place.*

(S)

Final designs for the four NAMA have been presented to the Directive Committee, whose comments and remarks have been incorporated in the final versions and submitted to MINAM as part of the tentative sectoral programming of the country NDC.

The achievement is significant and satisfactory. Processes and results, notwithstanding the gathering of valuable information, have been heterogeneous because of the different nature of each set of actions. Final approval for its inclusion in the country NDC is expected

Outcome 3:

Entities related to renewable energy connected to the grid (all technologies excluding large hydro) and (ii) off grid renewable energy sub-sectors are implementing prioritized NAMAs in a piloting phase and contributing to the achievement of Peru's voluntary mitigation target.

- *Implementation of NAMA activity #1 (off grid renewable energy with PV)*

(MS)

The rural electrification program is still being implemented, with nearly 100,000 Households served with PVS. The remaining PVS have been programmed for installation in midyear 2019. These installations are considered as a part of the MRV design and protocols already completed.

The government has distributed by now more than 250,000 improved stoves, and there are 1.5 million FISE vouchers to subsidy acquisition of natural liquid gas stoves (LGP). These installations will be counted as part of the NAMA within the MRV protocol. The Project has also implemented two pre-pilot to test and evaluate clean stoves that could be promoted by the government (solar, gasifier, and ventilator) and 200 stoves have been acquired (solar and ventilator) to implement a pilot at the country level in 2019, in collaboration with FONCODES-MIDIS.

The achievement is considered as moderately satisfactory in terms of the indicator. The actual efficacy of the actions involved must be assessed more precisely, with *ad-hoc* indicators and in a

larger timeframe, because the kind of care and needed maintenance from users can affect the expected results and sustainability.

- *Implementation of Performance Based Payment System for off Grid RE with PV Systems.*

(MS)

The payment mechanism is in hands of the local energy distribution companies, that have started only recently to use it, since the massive installation program is still in early stage of implementation. There are delays of up to 6 months in the check processes by the companies in charge due to undetermined causes.

The achievement valuation is consistent with the indicator provided, as far as is referred to the basis of the payment for off-the grid systems. However, reported problems in the functioning of the system calls for a proper revision and proposals for correction.

- *Implementation of NAMA activity #2 (Renewable Energy and/or Energy Efficiency*

(MS)

The NAMA for energy efficiency continues its implementation with the labelling for the 9 categories of equipment reported, now in implementation at the national level (since April 2018) with minimum efficiency standards for those same categories in the public sector (homologation factsheets). The Project is working with first to third tier banks ('Cajas', development banks, and international financial entities) to explore preferential financial mechanisms for efficient products ('green credit').

In the second semester of 2018 a market study commenced that compares results with the one of 2013, in order to evaluate the impact of labelling and its evolution through the nine categories now obliged to carry labelling. The study could not start earlier in order to ensure enough time for labelling implementation, obligatory as from April 2018

The implementation of the energy efficiency NAMA relies on the execution of a different project. In terms of its implementation in the frame of the NAMA Project, there are positive advance, but an *ad-hoc* evaluation is required given the short time elapsed since its legal inception (April 2018).

- *Implementation of NAMA Activity #3 (grid connected Renewable Energy and/or Energy Efficiency).*

(MS)

The NAMA, [now called] Electric transportation is in initial stage of implementation via a set of interventions to promote electric transport. It is a complex activity and pioneer in its scope and design. This activity requires policy changes and intense activity of interagency coordination.

The Project has prepared a proposal for legislative change which is being revised by the MINEM, and a proposal for a law to promote electric transport. The Project holds meetings with the ministries of transport, production and economy and finance (MEF) to support their role in the transition to electric transportation. One of the proposed changes was the modification of selective

tax to consumption (ISC) in conventional vehicles and fuels, in favor of the electric vehicles and hybrids as part of the strategy of green growth of the MEF. The initiative has been already approved.

The Project is helping to facilitate a second pilot of electric bus with an interinstitutional agreement already signed for its development by the MINEM, MINAM, MTC, PROTRANSPORTE and GSEP. The activity has a breakthrough dynamic and good prospects, but the proposed enabling regulations, and institutional changes (the creation of the ATU) pose the need for close monitoring. Despite these advances, the specialists in the sector transport services are of the opinion that there is stagnation and backwardness in the country in relation to the electric transport, in comparison with other countries.

- *Implementation of NAMA Activity #4 (grid connected Renewable Energy).* **(MS)**

The NAMA, [now known as] RER connected, is in implementation and the data of the first four auctions have been incorporated into the MRV system. To date, as a result of the RE auctions, renewable energy represents 4.5% of the grid connected generation of electricity; if small hydroelectric projects are included, this percentage amounts to 7%. With only this NAMA the Project had reached the level of ambition stated in the ProDoc for reducing direct GHG emissions in the sector.

To boost its advance regulatory changes that allow recognition of Firm Capacity to renewable sources are in course that seek to allow these sources to hire with free and regulated customers (this is a massive barrier now for energy development renewable). The proposal prepared in the framework of the Project is being evaluated by MINEM and its publication is still pending. These changes are required so that all new projects RE entering the Peruvian grid can be accounted as part of the NAMA.

The new procedure for the emission factor developed by the Project is being validated to be applied to all calculations of reduction in the system of MRV for the NAMA RE grid connected, energy efficiency and electric vehicles, as well as other initiatives to reduce emissions in the sector energy.

The project is conducting a pilot to install PVS in MINEM premises and in campus of seven public universities across the country, in order to provide information on spatial and temporal variability of solar resources; and to support the formulation of standards for distributed generation, scheduled for publication in 2018. This regulation will help promote the self-generation with grid connected PVS, with a financial mechanism (net-metering, net turnover, or "feed-in" tariffs) to help recover the initial investment.

The Project has developed in collaboration with NREL a solar map of Peru, as a first step for the determination of the national potential for solar energy; and to design an integrated map of accessible renewable energy by any kind of user (residential, commercial, or services) to develop their PVS and other renewable energy resources.

The Project has also submitted to MINEM a proposal to implement auctions of 'energy blocks' with associated distributors, with a share of renewable energy generation. This will add market renewable energy opportunities to compete in favorable conditions with conventional sources. The activity is on track for attaining the Outcome, thanks to the dynamism deployed by solar energy

investments in the country. Problems remain related to needed norms changes that presently limit its expansion. Concerns as to future maintenance and the level of operation functioning of the installed systems call for an ad-hoc assessment.

- *Implementation of MRV protocols and tracking of NAMA related GHG emission reductions.*

(MS)

Protocols have been designed for the NAMA of energy efficiency, connected RE, and electrical transport, as well as a proposal for the NAMA Universal access to sustainable energy. All four are in the initial process of implementation as a result of the early stages of pilot projects and measurement and reporting of previous actions that are part of the four NAMA; but they have not yet been accounted for the NDC registry.

Outcome 4

Precise mechanism for measuring and accounting of real reductions of GHG emissions mitigation in the generation sector of energy and its end-use.

- *MRV protocol designed*

(S)

The four NAMA have been designed with their respective protocols MRV, which have been presented to the Directive Committee for approval. The comments received have been incorporated into the final design documents. The four NAMA designs, and their respective MRV systems, have been sent officially to the MINAM in December 2018, to formally include them as part of the sectoral tentative programming of the NDC of the country. The achievement is qualified as satisfactory in terms of the indicator; the protocols still require registration and normalization from the UNFCCC

- *Implementation of energy sector MRV registry.*

(MS)

Registration of the four NAMA before the UNFCCC remains pending until the National Protocol MRV is formulated and the registration processes of the MINAM as focal point of the NDC is completed. However, the designs of the four NAMA have been delivered formally to the MINAM to be included in the NDC, and for your records. Achievement is in the process of being attained in terms of the result indicator considered.

- *Mainstreaming of climate change mitigation in Ministry of Finance's Results Based Budgeting Program*

(MI)

The MEF has approved various 'budget by results programs' (BbR or PPR) which are directly or indirectly linked to the four NAMA mitigation measures. These PPR have been analyzed by the

Project and are relevant, so the programs are being included as part of the sources of funding within the NAMA designs.

It must be noticed, however, that the process of joining a PPR through the Project activities, and its subsequent formal implementation in the framework of the budgeting system for this modality, takes time and technical work of coordination with MEF and fitness of activities by the law. It is required, therefore, to start and accelerate the process in the remainder of the implementation period.

4.2.2 Remaining Barriers to achieving the Project Outcomes

The main barriers of general and structural order perceived during the review, that join the ones of internal order (discussed in the following section 4.4), are:

- Difficulties to update and renew the sectoral and sub-sectoral regulations due to bureaucratic inertia both inside of the sector itself, as in regulators bodies or in MEF, despite the significant progress made in recent years. In large part, this is due to national macroeconomic policies and governmental 'sectorialismo' that are not yet aligned with the needs of change and adaptation of the national energy matrix and the growing innovation rate at the international level, in particular in relation to emergencies posed by the imminent impacts of climate change.
- Insufficient approach and dialogue between public and private institutions, and between them and consumers and beneficiaries, which limits the coordination within the public sector; as well as the tendency in both sides to reserve information, which does not help to spread knowledge and experience, and does not facilitates the innovation processes.
- High frequency in turnover and changes in technical and political officials in all sectors and governmental levels, that delay and significantly alters the transfer processes, priorities for action, agreements or institutional arrangements, and the execution of public investment and spending.
- Information and communication dispersed and not convergent require new strategies of communication and dissemination. Despite expressed willingness to spread and share the experiences, yet there is an external perception that "they don't share or do it unfrequently", and "they are not building on the already advanced". Indeed, there is lack of convergence and collaboration between public and private entities, including non-governmental organizations and international cooperation. The 'day to day' of work and frequent changes in the plans of governmental and private entities leave little room to build on the advanced by others and reconcile interests and investments of mutual interest.
- Cultural and social differences, including economic rationality, in wide ranges of the potential beneficiary population, preclude the introduction of technological innovations and their long-term co-benefits for environment, health and economics, in a context of low incidence of formal education and limited access to technical information.

4.3 Execution of the project and adaptive management.

4.3.1 Work management and planning mechanisms

The project is executed by the Ministry of Energy and Mines-MINEM through the national implementation modality (NIM), and as an executing partner. Within the MINEM, the responsibility lies in the vice of Energy, in the General Directorate of Energy Efficiency (DGEE), through the establishment of the Project Management Unit (PMU). The project's steering committee has been established from the outset, which oversees the work of the PMU and takes the substantial management decisions (see **Figure 1**).

The MINEM has opted for UNDP standards for the implementation of the Project in order to timely access the goods and services required, shortening the time and management of the government budget. Thus, UNDP is responsible for disbursements, provides technical assistance, supports coordination and networking with other institutions, and organizes relevant reviews and assessments. By decision of the CDP, it is constituted as guarantor of the Project and coordination point with the GEF.

The Project has been exposed to several adaptive management decisions, especially due to the delay of six months at the beginning, and to the need to define the scope of some results and goals. Other delays have affected the process of elaboration of TdR and contracting of consultancies, mostly by the limited supply of technical quality and local experience. As a result of these delays, the Project had to concentrate efforts on accelerating the implementation processes that, as mentioned before, found various barriers and difficulties without precedents due to the innovations inherent to Project.

In terms of physical goals, the Project achieves moderately satisfactory ratings on average. But in budgetary terms, due to lower disbursements for services, the execution reaches only 38% (December 2018) of the total budget (see **Table 1**). The apparent imbalance between the executed and the disbursed has had a hidden cost: it has been necessary an active participation in time and work of the Coordinator and the team of the Project to compensate the technical flaws and to complement the products of some consulting teams. This unforeseen activity would have detracted time and energy from the Project team for other accompanying activities and interinstitutional coordination with other actors in the private sector and associates.

Table 1 shows the investment by Outcome, both annual and cumulative, presenting an advance of forecasts for 2019 and the resulting balance to be implemented in 2020. These figures give rise to the **Charts 3** and **4**, which allow to appreciate in greater detail the evolution and the necessary increment curves.

Outcome 3, both in the programming of the ProDoc and in execution, is the key component in covering the elaboration of the diagnostics and documents of the four NAMA. Compared to 39% of average execution, this component reaches in 2018 an execution of 46%, and is expected to reach

80% at the end of 2019. It is also the highest budget amount, helping to raise the total average of Project execution.

Outcome 4 is the second in technical and budgetary importance. Cannot be executed in its full dimension because requires NAMA implementation information that will only be obtained during 2019 and onwards, so its null current execution reduces the global percentage. If the investment amount were not considered, the execution would go from 39% to 48%. However, it is also appreciated that their full implementation could exceed the current timeframe for the Project.

As for the expenditure on Outcomes 1 and 2, which have a satisfactory progress, it is noticeable the lower expenditure incurred for the result until 2018: 57% of those planned in ProDoc. It should be assessed in the 2019 workplans, and possibly in 2020, a sensible rescheduling of the remaining amounts to support other activities aimed at consolidating the achievements and improving the products. What remains to be executed in these components is a significant amount (362.000) that probably will not be invested in the originally programmed items.

Finally, it draws attention the amount allocated to the Project management component, which is less than 5% of the total budget, although it has at 2018 an execution of 40%, like that of the Project as a whole. Depending on the criteria that may have been taken to distribute the fixed and current expenditures, this amount might or may not be adequate; but it looks as probably underestimated for the scope of the Project.

The distribution of the budget carried out by NAMA to 2018 is presented in **Table 2**, with an amount equal to the total of the Project. The percentage advance in relation to the total contribution of the GEF is **38%**.

Table 1. BUDGET EXPENSES BY NAMA (USA \$)

NAMA	2016	2017	2018	Accum.
Energy Efficiency	17,339	179,026	114,520	310,884
Electric Transport	22,190	274,774	336,582	633,546
RER Connected	20,035	293,185	83,653	396,873
Universal Access to Sustainable Energy	19,440	151,267	235,371	406,079
Totals	79.004	898,253	770,126	1 747,382

Table 2. PROGRAMMED AND EXECUTED BUDGET BY OUTCOME AND RUNNING BALANCES FOR 2019 – 2020

BUDGET PROGRAMMED, EXECUTED, AND BALANCE FOR 2019 - 2020 - (US\$)

ProDoc Budget	2015	2016	2017	2018	2019	2020	Total Budgeted
Outcome 1	11.000	135.000	120.000	24.000	0		290.000
Outcome 2	0	275.000	220.000	60.000	35.000		590.000
Outcome 3	0	875.000	875.000	415.000	365.000		2.530.000
Outcome 4	0	250.000	265.000	195.000	180.000		890.000
Administration	33.000	44.000	56.000	36.000	31.000		200.000
Total	44.000	1.579.000	1.536.000	730.000	611.000	0	4.500.000

Budget execution	2015	2016	2017	2018	2019(*) Planned	2020 (**) Expected	Accumulated up to 2018	Expected execution for 2019-2020	% Executed up to 2018
Outcome 1	0	19.439	44.170	86.496	35.572	104.324	150.104	139.896	52%
Outcome 2	0	0	276.066	82.409	11.394	220.131	358.475	231.525	61%
Outcome 3	0	35.813	552.080	569.958	854.304	517.845	1.157.851	1.372.149	46%
Outcome 4	0	0	0	0	63.000	827.000	0	890.000	0%
Administration	0	23.752	25.937	31.263	26.150	92.898	80.952	119.048	40%
Total	0	79.004	898.252	770.125	990.421	1.762.198	1.747.382	2.752.618	39%

(*) According to preliminary workplan 2019 (January 7th, 2019)

(**) Balance by difference with total budget programmed for each activity

ACUMMULATED OF PROGRAMMED AND EXECUTED BUDGETS 2014 - 2020 (expected for 2019 and 2020)

PROGRAMMED	2015	2016	2017	2018	2019	2020
Outcome 1	11.000	146.000	266.000	290.000	290.000	
Outcome 2	0	275.000	495.000	555.000	590.000	
Outcome 3	0	875.000	1.750.000	2.165.000	2.530.000	
Outcome 4	0	250.000	515.000	710.000	890.000	
Administration	33.000	77.000	133.000	169.000	200.000	
TOTAL	44.000	1.623.000	3.159.000	3.889.000	4.500.000	

EXECUTED	2015	2016	2017	2018	2019	2020
Outcome 1	0	19.439	63.608	150.104	185.676	290.000
Outcome 2	0	0	276.066	358.475	369.869	590.000
Outcome 3	0	35.813	587.892	1.157.851	2.012.155	2.530.000
Outcome 4	0	0	0	0	63.000	890.000
Administration	0	23.752	49.689	80.952	107.102	200.000
TOTAL	0	79.004	977.256	1.747.382	2.737.802	4.500.000

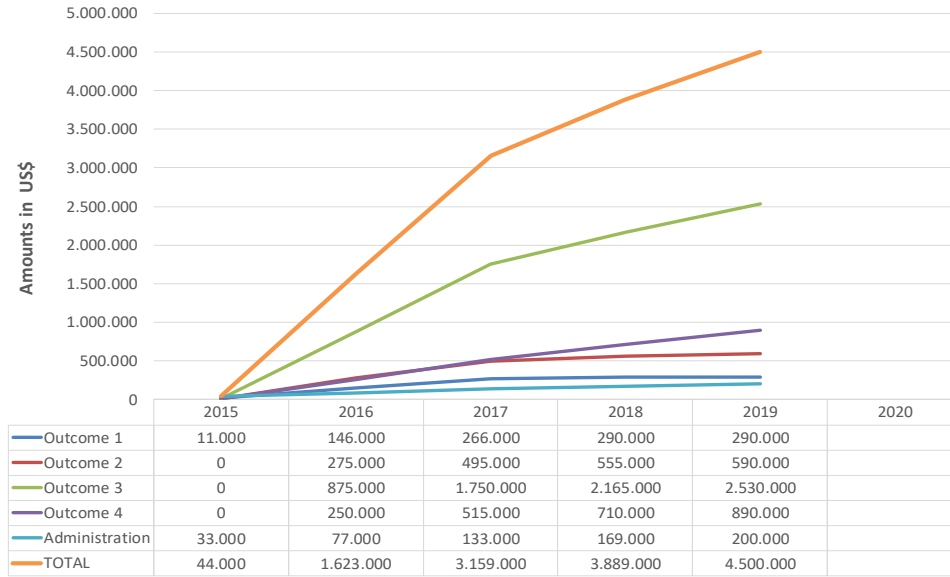
COMPARATIVE OF TOTAL ACCUMULATED PROGRAMMED vs EXECUTED 2015 - 2020

	2015	2016	2017	2018	2019	2020
PROGRAMMED	44.000	1.623.000	3.159.000	3.889.000	4.500.000	
ON EXECUTION	0	79.004	977.256	1.747.382	2.737.802	4.500.000

Source: Data original from the ProDoc and handed by the Project, elaborated by the MTR

Chart 3. PROGRAMMED BUDGET BY OUTCOME

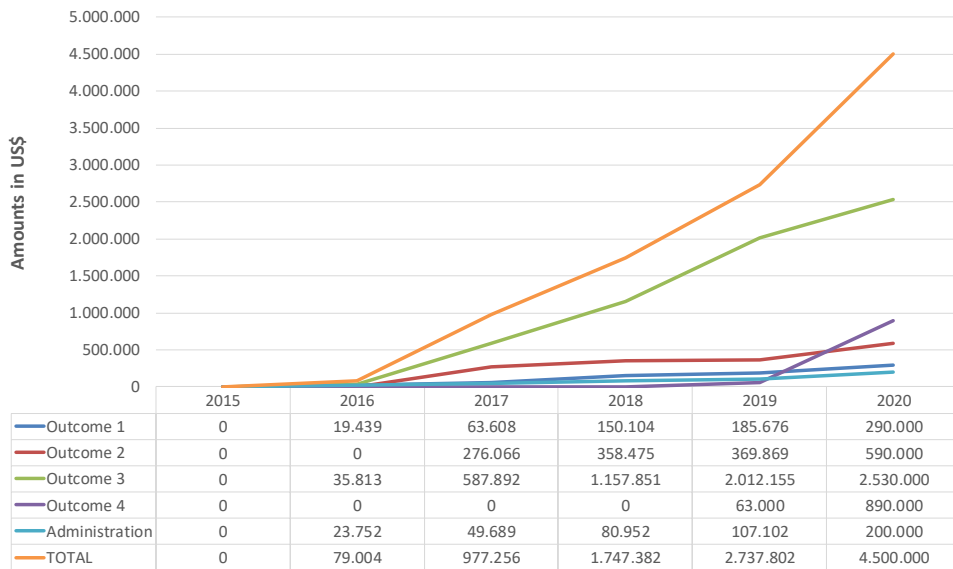
ACUMMULATED OF PROGRAMMED BUDGET (ProDoc)



Programmed by years up to 2019

Chart 4. BUDGET EXECUTED BY OUTCOME

BUDGET EXECUTION UP TO 2018 AND EXPECTED FOR 2019-2020



Actual execution and expected for 2019-2020

Source: Original data from ProDoc and expenditure and previsions handed by the Project team.

4.3.2 Finance and co-financing.

Table 3 shows the co-financing scheme committed at the time of signature of the ProDoc, both in cash and in kind, by the respective entities, and which has not changed during the period of execution. The most important amounts correspond to parallel projects running both by MEF and MINEM. In the case of MEF, is the project with the World Bank, a partnership for the preparation of carbon markets (PMR); and in the case of MINEM, the National Rural Electrification program and the Energy Efficiency project, directly linked to the objectives of the NAMA Project. In the case of MINAM and UNDP, it corresponds to several related projects, as well as time and current costs of support activities, in cash or in kind, for the value of time and dedication of officials and specialists partially dedicated to collaborating with the Project.

It has not been possible at the close of this MTR report to know in detail the actual execution of these contributions, due to the time required by the institutions to prepare this information, in many cases entrusted to the administrative dependencies. In any case, the information probably will not reveal any precise correlation between the individual contributions and the results of the Project.

4.3.3 Monitoring and Evaluation systems.

The monitoring and evaluation systems applied are those envisaged in the PRODOC and analogues for GEF/UNDP projects. The results of the review to most of the reporting documents of these activities reveal satisfactory compliance with the monitoring and evaluation to date. There are no significant deviations, except for delays in execution. No further corrections or course amendments appear to have been applied, except for those assumed in the inception workshop.

The following instruments and scopes for monitoring and evaluation of the project are currently used:

- ProDoc signed and annexes.
- Report from the Inception Workshop (June 16th, 2016)
- CDP sessions and respective records (6 minutes of meetings, on average two per year): Presentation of Plan 2019 to CDP.
- Eventual meetings with UNDP officials, and entities involved (MEF, MINAM, PRODUCE, Internal, and others).
- Quarterly, semi-annual and yearly reports. Reports of 2016 (III trimester, IV trimester, semi-annual and yearly); 2017 (I quarter, II trimester, III trimester, IV Quarter and yearly); 2018 (I Quarter, II trimester and III trimester).
- Workplan for 2019
- PIR 2017, PIR 2018.
- TT updated to 2018.

Table 3. COFINANCING ENTITIES AND CONTRIBUTIONS BY OUTCOME (US\$)

		Ministerio de Energía y Minas (MINEM)	Ministerio del Ambiente (MINAM)	Ministerio de Economía y Finanzas (MEF)	PNUD Peru	Total
Resultado 1	Efectivo		60.000	1.100.000	130.000	1.290.000
	En especies	70.000	20.000		10.000	100.000
Resultado 2	Efectivo		50.000	1.400.000	100.000	1.550.000
	En especies	100.000				100.000
Resultado 3	Efectivo	20.000.000	150.000	5.000.000	70.000	25.220.000
	En especies	200.000	50.000			250.000
Resultado 4	Efectivo		140.000	1.500.000	600.000	2.240.000
	En especies	230.000	30.000			260.000
Gerente del Proyecto	Efectivo		200.000	350.000	100.000	650.000
	En especies	200.000	100.000		50.000	350.000
Total		20.000.000	600.000	9.350.000	1.300.000	30.950.000
		800.000	200.000	0	60.000	1.060.000
		20.800.000	800.000	9.350.000	1.060.000	32.010.000

Source: Project document (ProDoc) p. 65.

The reports listed show that the advance was done according to the logical framework of the ProDoc, by result and by indicator, with appropriate level of detail. However, as noted earlier, some indicators in the logical framework did not have a clearly quantified or defined goal at the time of formulation of the Project, or there are no technical or conceptual definitions to establish with greater precision the scope of the products to obtain. In general terms, the logical framework should be revised and re-approved more accurately by the indicators.

Both the PIR reports and the quarterly reports and administrative and budgetary rescheduling reports have been prepared with an adequate level of detail and enough information to track the Project activities.

4.3.4 Stakeholder engagement

The Project maintains as premise the involvement and participation of multiple entities and actors according to the nature and scope of the energy efficiency effort and reduction of GHG emissions. The implementation of the Project is attached to a specialized sectoral entity, such as MINEM; and within it, to a relatively new dependence (DGEE). This this condition is not easy to overcome for the purposes of interinstitutional opening and coordination. Without detriment to the quality of the team in charge, the efforts of the DGEE and the results achieved, it is perceived that the Project does not attain the optimum level of institutional commitment on the part of MINEM itself,

so it will be necessary an important effort to convoke internal collaboration from DGER, DGE, OPP and other support units, in the remainder of the execution.

In terms of the CDP, whilst there is a good relationship with the entities that make it up, and opening up to the incorporation of new members as the activities progress, it would be desirable to have a higher frequency of sessions and on auspicious instances, with presence from the Holders, to better guide and accelerate the execution of the Project. Formal sessions are only twice a year and are usually close in time (end and beginning of the year). It is understood that the CDP does not have to be involved in the day-to-day and technical execution details; But it could be considered the setting up of a multi-sectoral technical Committee for Support and consultation, flexible composition and eventual meetings, including the participation of key private actors. This is a suggestion reiterated by several interviewees, and the experience of the PlanCC project is a good example.

In addition to its role in oversight and project assurance, as well as executor of budget disbursements, UNDP plays the important role of technical consultancy and liaison with experiences in other areas of the region; However, this role does not come to be perceived as relevant by private entities; It would therefore be advisable to have a greater participation in the relationship with the actors, as much as possible, given the workload of the representation in the country.

Direct stakeholders, such as other sectors and government agencies with roles in NAMA, consultants and companies or private sector guilds recognize the proactive work of the Project team and the DGEE, as well as appreciate the value of the information produced by the diagnostics and design of the NAMA; such is the case of civil associations (Transitemos, Peruvian Chamber of Renewable Energy, Association of Rural and Municipal Saving Funds, and so on). Nonetheless, they express great interest in following the process more closely and increasing their participation with a receptive dialogue on the part of the Project's Coordination.

4.3.5 Information and communication.

In the interest expressed, it is important that the news of the progress of the project, and the valuable information that is obtained in the formulation of the NAMAs is publicly shared, even with the caveat of being preliminary or unofficial information. It is understandable the reserve of the official entities against the risks of diffusion and unauthorized use of information, but the alternative is the ignorance and loss of interest of the actors and beneficiaries. The initiative of the Project to undertake an intense communication campaign with the increase of the professional team is advisable, necessary and timely.

The Project Web page could contain more information and links (for example, to the UNFCCC page, to the MINAM, MEF and related projects, such as energy efficiency or PlanCC) in order to facilitate its use and articulate the interest of the general public. In terms of diffusion in workshops, conferences, courses and fairs (like the successful one in July 2018), the beginning of the pre-pilots and pilots will give occasions for these events, which must be opened and if possible deconcentrated as pertinent.

The initiative of the 'Technical Institute of Women-ITM' must be reinforced within a multisectoral scope. Recognizing the difficulties of putting several entities in line with the subject, the convergences of this initiative with other coincident or similar and now isolated, make it advisable a joint effort of coordination and action.

A crucial aspect, in which the TdR of the MTR is clear, is to reach an audience of potential actors and beneficiaries of the Project, beyond the obvious direct and indirect stakeholders in companies, rural and urban households, and public sector. The selected NAMA have a large impact on various aspects of economic and social development, beyond merely energy or emission reductions.

The aspects of gender and interculturality should be treated with greater incidence for a better understanding of the population of the related issues of environment, health, housekeeping, and overall social progress. This applies especially to the NAMA of 'Universal access to sustainable energy' and to electric transport. But it can also expand to the perceived value spectrum with the other two NAMA, connected RE and energy efficiency, especially in end use.

The project's relationship with global GHG emissions reduction efforts should be put in the perspective of Peru's long-term development and competitiveness in the region and the world, beyond the reference to formal reduction commitments, which are not associated in the imaginary of the population as essential or necessary, and in any case, non-priority. The project has an important role to promote sustainable development in the country, and it must be highlighted in an accessible way for the cultural and socioeconomic diversity of the population.

4.4 Sustainability

The sustainability of the Project, in terms of the risks described properly in the ProDoc and in the reports elaborated over the two and a half years of execution, are mostly of structural order, rather than conjunctural. Therefore, there have been no additional risks or drastic changes in the scope and levels envisaged. In any case, the economic risks of political or functional instability of government entities are being mitigated in the last two years, and the panorama becomes more auspicious for the introduction of the topics promoted by the Project. An updated review is presented below.

4.4.1 Financial risks for sustainability.

The financial risks, in terms of continuity of actions and full implementation of the NAMA once the GEF funding has been completed, remain structural in the sense of the relative priorities and budgets allocated by the State. Nevertheless, signs such as the approval and regulation of the framework law and climate change, the work of the GMT for the NDC and the antecedents of the PlanCC and the INDC, and some measures favorable to private investment in renewable energies or energy efficiency like the Reduction of taxes (ISC) to hybrid or electric vehicles, are positive signs that indicate a shift in the preference of State support to the renewable energies and the consequent commitment of financial and budgetary support that it implies.

On the private investment side there is a growing interest of civil unions and associations in promoting electric transport and the generation and final use of renewable energies, as well as a perception that the country should accelerate its transformation so as not to lose ranking positions in comparison to countries in the region that are advancing at a higher rate in these areas, as in the case of Chile and Colombia.

4.4.2 Socioeconomic risks for sustainability

The possible socioeconomic risks to the sustainability of the Project and its actions can reside in the following points that the current management and the CDP must address to ensure that they do not adversely affect or reduce the impact of the Project:

- Loss of the quality of the installed services and of the acceptance of the users, especially in the actions of the NAMA of "Universal access...", for lack of maintenance, lack of interest in the distribution companies, or reversal of the users to fossil fuels because they do not clearly perceive the economic, social and environmental benefits of the programs.
- Reduction of the collaboration and contact of the Project with actors in the private sector, guilds and organizations of development, by discontinuity in the flow of information, actions of promotion, or call to contributions, that can reduce his interest in the progress of Project actions.
- Dispersion of governmental initiatives, or non-converging by the private sector and users, that reduce the potential of emission reductions through NAMA, due to lack of channels and adequate regulation to the preferences and behavior of the actors.

4.4.3 Sustainability risks related to the institutional framework and governance.

In this regard it should be noted the need to overcome the barriers in the regulations to access the essential conditions enabling the actions of the Project. Now there is a favorable tendency to its obtaining, but the bureaucratic resistances, the interferences between the sectors, and the problems of management in the scale and territorial levels of governance (national, sub-national and local) require a careful follow-up and rationalization. This care exceeds the sectoral and action scope of the project itself, requiring coordination at the highest political level, and the preparation of consistent economic and technical arguments. The standard package to promote the generation and end-use of renewable energies is a priority.

Another risk is that of the 'sectorialismo' inherent in the national system of government, and the dispersion and duplication of competencies in matters substantially linked to the Project. Such is the case of transport and urban development, industry and trade of energy equipment, rural development and decentralization processes, risk management of climate change, and others of national scope. These risks can be alleviated with political actions from the CDP, and with calls from specialists, academics, companies and civil society in technical committees or forums that allow to define and promote ways of harmonic solution.

4.4.4 Environmental risks for sustainability

The Project has obvious environmental co-benefits, so there is no risk to the continuity of the Project beyond Imponderable natural or accidental origin. However, the unwanted reverse situation may be considered: that the Project, or other similar projects, may not succeed in the final implementation of its actions for renewable energies, and this determines a loss of confidence or expectations in the technologies and proposals that finally cause a reversal to situations of greater environmental deterioration.

5. Project alignment to the CPD and UNDP Strategic Plan

The alignment of the Project to the 'Country Program Document (CPD) and the UNDP Strategic Plan, is based on the commitments acquired by the Government of Peru and the UNDP since September 1961 (legislative resolution N ° 13706) as well as in the agreements relating to the Special Assistance Fund.

Part of the legal context is the Plan of Action of the Country Program (CPAP), recognized by the Government of Peru as the International Technical Cooperation Agreement with UNDP, for the period 2012-2016, the framework in which the Project is generated and initiated. This agreement mention - among other provisions - In the chapter of the program area of environmental sustainability: *"... In the area of environmental sustainability, UNDP will provide technical assistance to develop various tools to facilitate environmental management and financing and strengthen the capacities of relevant institutions at the national, regional and local levels, with the aim of advancing the fulfilment of the commitments undertaken by Peru in the framework of the three international conventions on the environment: the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on the Biodiversity (CBD) and the United Nations Convention to Combat Desertification (UNCCD)."*

The CPAP, in the framework of results and resources of the programmatic area of environmental sustainability includes, as expected effect of the UNDAF *"Effect n° 4: The state, with the participation of the civil society, the private sector, the scientific and academic institutions, They will have designed, implemented and/or strengthened policies, programs and plans, with a focus on environmental sustainability, for the sustainable management of natural resources and the conservation of biodiversity"*, which in its five products refers specifically to *"...The conditions and actions promoted by the project, from institutional strengthening, to management and conservation of resources, and action against climate change, including the respective gender ratings in each case."*

The project, in its formulation and scope, contributes directly to the obtaining of the expected products and effects of the UNDAF and the CPD; and indirectly to other aspects such as social inclusion, gender considerations, poverty reduction, improving the quality of rural life, the sustainability of renewable resources and the efficiency of non-renewable use. Therefore, there is a positive alignment of the Project with UNDP/GEF documents and plans, both global and country, and with national sectoral policies regarding energy; and social issues in terms of poverty alleviation and inclusion, and future forecasts of international competitiveness and contribution to the global reduction of GHG emissions.

6. Conclusions and Recommendations

6.1 Conclusions

- The project is a laudable step towards sustainable energy development in the country. While there have been delays due to political and institutional reasons, partly because of the pioneering nature of its objectives and goals, it requires increased efforts to overcome barriers and to achieve a better understanding of its scope. The current political and cultural environment in the country configure a more favorable scenario for a smooth implementation of actions, interinstitutional collaboration, and greater openness by the various actors.
- There is a dual vision of the Project priorities among the stakeholders: One appreciates the technological advances in energy development, but their priority and attention focus in the social and economic well-being; the other is mostly focused on the reduction of GHG emissions for the mitigation of climate change. A wider dissemination is required about the scope and importance of the NAMA for the competitiveness and climate security of the country, and of its role in the process of a comprehensive social and economic adaptation.
- The design of the Project is appropriate in terms of its main objectives and expected results; but it is necessary to define more precisely the scope of the very NAMAs, their goals and respective actions needed. This flaw in the starting design – due to the lack of a background to establish baselines - has resulted in generic outcome indicators, which are not quite aligned with the 'SMART' outlines and should be reviewed and sharpened during the remaining period of the Project. This MTR consider the ProDoc must be revised and precisions sought by the Project team should be included.
- The reference to indicators of direct and indirect reduction of GHG emissions under the ProDoc, is unclear as the activities identified in the various NAMA are conducive to structure actions in other energy projects or efficiency energy will make direct reductions. The NAMA are intended to

identify, quantify, and ordering the information on reduction activities, but do not produce directly such reductions.

- As for the process of execution and achievements in outcomes, it can be said that an important effort of progress has been made, that has implied an arduous curve of learning, mainly due to the delays at the beginning of the project, to the institutional changes in the Government and the sector and – above all – to an apparent lack of adequate supply of experts in the sectoral environment, which involved failed calls for technical consultancy and repeated interventions by the technical team to rectify and improve the contracted studies. Some specialists consulted, however, believe that it may have been due to a non-timely or poorly disseminated call among the specialists working in the national arena who have recognition at the international level.
- The overall financial progress of the project is 39% and the average valuation is satisfactory and moderately satisfactory; This reveals both a relative backwardness in terms of budgetary execution, and a relative efficiency in achieving results, in particular those relating to inventories, baselines, construction of marginal cost curves for emissions abatement, and design of the NAMA with their respective MRV protocols.
- To complete the Project, an extension of the execution period of at least six-month (up to December 2020) would be necessary, accompanied by strengthening measures to enhance the technical staff with positions *ad-hoc* for implementation needs, and attention to the recommendations referred to in the present report (6.2).
- The enabling conditions for the implementation of the NAMA are crucial. To obtain the needed adequate normative and rules require a vigorous political support both from MINEM itself and from the CDP members and the entities they represent, whose closeness and participation in the Project development might be more intense and frequent.
- A specialized sector that implements a cross-cutting project needs to establish alliances, agreements and action networks, as well as gain support from the highest levels of government. The incidence of the adoption of the Framework Law for Climate Change; the advances in tariff and taxation treatment for renewable energies; the creation of the Urban Transport Authority (ATU) for metropolitan Lima; and the linkage of the Project with the NDC through the NAMA, among other measures that are emerging, raise a favorable scenario to be exploited.
- Interviewed actors repeatedly suggest that the project takes a practice of openness in the information produced, and more fluent communication with all stakeholders, mainly those from the private sector and business associations, in order to enrich the lessons learned and avoid duplication of efforts. The concentrated effort in formulation of the diagnoses and NAMA may have limited this approach; but in the remainder of the period of execution this activity should be intensified.
- In terms of financing and co-financing, the scheme assumed in the ProDoc, although legitimate and real, does not facilitate the identification of convergent actions and the quantification of contributions in terms of results. Apart from the asynchrony that could have occurred in the

progress of other sectors and entities in relation to the Project, it is often difficult to obtain immediate response from the public administrators on the implementation of the counterpart expenses, let alone co-financing, to obtain conclusions that contribute to the implementation of the Project.

- Activities for accountability, revision and maintenance of the administrative records of expenditure and execution, are compatible with the good practices of the UNDP/GEF, including audits exercises, and no needs for corrections have arisen during the MTR.
- Gender issues are eminently cross-sectoral. The Project addresses them with direct and specific activities such as the pilot activities and the promotion of a technical institution to train women (now promoted as an “energy school for women” or ‘*e-Mujer*’, laudable initiative which however requires a wider environment for implementation that surpasses the energy sector. This aspect demands a specialized work with other DGs within MINEM (DGER, DGE) and several Ministries (MIMP, MINAM, MIDIS, MINCU); aside of a close relationship with actors of civil society and international cooperation currently working in this field. It is striking, on the other hand, that simultaneous action in interculturality is not mentioned in the ProDoc, since this is an aspect that affects the Andean and Amazonian rural areas when it comes to introducing changes of attitude and habits of life, as in the case of the NAMA Universal Access....”.
- In terms of risks for the sustainability of the Project outcomes, there are no signs of negative changes in the structural terms in which they are expressed in the ProDoc. On the contrary, there are now positive signs of greater political and economic stability, and favorable expressions in the Government environment towards the adoption of sustainable practices for environmental caring development; and as a result, greater attention to issues of sustainable energy.
- The formalization of the NDC and the commitments to reduce GHG emissions in the long term, as well as the adoption of concomitant rules on climate change and sustainable development confirm this orientation, which must – however – be subjected to monitoring and sectoral accompaniment. Financial sustainability, on the other hand, can and should be sought through the promotion and adequacy of rules that allow for a more fluid and active participation of the private sector.

6.2 Recommendations

6.2.1 On the objectives, implementation strategy and complementary actions.

- Review and precisely define objectives and expected outcomes for each NAMA in order to derive accountable and specific indicators for the remaining execution period and ultimate follow up. For example, updating and clarifying the indicators for those NAMA already formulated; incorporate indicators of effectiveness for long term evaluation that NAMA must devise; align technical objectives with social ones, in terms of indicators of change, trends in use of innovations, and others.

- Clearly define the scope of intervention of the Project in relation to other projects and activities in current development that are convergent, coincidental, or in recent inception, in order to avoid duplication or overlapping of efforts and responsibilities. In particular, make a conceptual and technical clarification of the relationship of the NAMA and the Project with the quantification of direct and indirect emissions related to energy in other projects and related activities. This work can be done through a technical workgroup with the entities involved (MINEM, MINAM, OSINERGMIN) and the Project team, in order to obtain lessons learned for future similar projects.

6.2.2 On adaptive management

- Seek approval of a no-cost extension of the execution period, justified in the unforeseen initial delays and the relative efficiency in the implementation of the substantive components of the Project (inventories, baselines, documents of) NAMA and MRV protocols); as well as on the analysis of its impact and relevance in the context of the NDC of the country, and sustainability of the investment realized.
- Ensure the expansion of the technical team in charge of the implementation of the Project, as has been proposed by the Coordinator in the 2019 workplan, which seems to be adequate: specialists in information and communications, gender and climate change, and Electric Transport as the NAMA requiring more interinstitutional
- Organize, with the endorsement of the CDP, workgroups or committees of multisectoral technical support for each NAMA, with regular sessions; and establish a comprehensive roadmap until the end of the Project, with extension up to 2030, in terms of expected impact and follow-up needs.
- Coordinate as soon as possible with the OPP of the Ministry and with MEF the early formulation and programming of the incorporation of the NAMAs in the budgeting by results (BbR) national scheme, in order to opportunely attain this inclusion, crucial for the NAMAs implementation, during the execution frame of the Project.

6.2.3 On information and communication.

- Expand the scope of communication and information, both through the website and by calls for workshops, briefings, newsletters or monthly fact sheets on advances, visits and formal invitations to guilds and businesses, among other means. Procure, to this end, the support of the highest ministerial level in MINEM and of other ministries and institutions, especially those who integrate the CDP.
- Establish routines and periodical technical meetings for exchange and systematic internal discussions within the Project team, about the progress toward targets, and avenues for innovation in actions, or amendment in work plans

6.2.4 On Gender and Intercultural approaches.

- Carry out studies, in coordination with the executors of the projects and activities that make up the NAMA, about gender and cultural features that may be influencing the implementation of the NAMA and its impact of poverty reduction (e.g. state of operation and use of SFV and improved stoves, cultural biases, attitudes and rationale of economic choices, changes in family economics, etc.).
- Coordinate with sectors and institutions specialized in the theme, the final design and optimization of performance of the proposed “energy school for women” in terms of its management and adscription, relying on already existing experience (SENCICO, SENATI, and other entities and NGOs).

6.2.5 On the NAMA and implementation of activities

In general:

- It is essential to have up-to-date information on the profile of energy demand, especially at the level of rural families but also in urban areas, including the future potential of other natural sources of sustainable energy, involving local governments and organized civil society. The Census of the 2017 should be an important tool for this interagency effort.
- Coordinate with the DGER the design of instruments to improve the planning schemes for energy access and development of actions in electrification, upgrading of the Rural Energy Plan, and regulating the intervention of the entities involved in the system (NGOs, regional and local governments, among others), in order to avoid the problems of cost overrun of the initiatives, and encourage the best use of the opportunities for services and care.
- Focus efforts and diligences in legal and regulatory instruments considered enabling conditions. For this purpose, increase coordination with OSINERGMIN, and establish technical dialogues with the actors involved in the design of rules, oriented to the removal of barriers to their formulation and approval.

In the NAMA Universal Access to Sustainable Energy:

- Enhance and impulse coordination and participation of the involved entities - working along with OSINERGMIN - in the review of business models, incorporation of indicators of quality of service, minimum standards, tariff structures (rate BT8); and studies on the causes of payment default or abandonment of SFV services, items that should inform the MRV protocols, to ensure the life span of the equipment (calculated at 20 years). Prioritize social and organizational factors, that tend to be overlooked despite their importance in the introduction and sustainable management of services in rural areas.

- Promote collaboration and exchange with other national entities and cooperation institutions that have experience and lessons learned in clean cooking, in order to strengthen and make more efficient and instructive the pilot activities. The knowledge shared in this area is vital to accurately determine the avoided emissions and ensure a sustainable implementation of the activities to be promoted. In this sense it is also essential that the pilots prioritize the building up of local leadership from the very beginning, as well as a local ownership, both in the management and in the direct benefits.

In the NAMA Energy Efficiency

- Promote appropriation of the NAMA in the framework of the energy efficiency project, through an organic and ongoing interaction of respective specialists, and political support of the DGEE; and work more closely with INDECOPI to ensure the success of the pilots and combine efforts and collaboration on the follow-up to the enforcement of standards and labelling.

In the NAMA RER Connected

- Intensify collaboration with the private sector and organizations of microfinancing for the design of business models suited to the supply and demand for energy, that stimulate and promote joint efforts.
- Intensify the efforts to get a positive change of the rules; and develop a pluri-institutional strategy, at the highest political level, to overcome barriers and the remaining resistance that preclude the development of the RE in the market and its incorporation to the system.

In the NAMA Electric Transport

- Include the Ministry of Transportation (MTC) and the Ministry of Housing in discussions within technical committees (alternatively, consider their inclusion in the CDP); and participate actively in the current discussion of the activities of the Project in terms of its implications in the establishment of the new 'urban authority of transport' (ATU) for metropolitan Lima, and its statutory regime. At the same time, continue the initial coordination and expand it to private and professional organizations related to transport, for a better design and dissemination of the pilots in preparation.

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